

RRADIKAL **G30** PETROL ENGINE



Kit Features:

Lightweight yet extremely strong G10 or carbon fiber frames.
High gloss large diameter 25mm tail boom with belt drive system.
Blade grips accommodate blades 14mm to 18mm blade roots.
300 mL fuel tank for long engine run time.
Convenient and easy access to spark plug.
Triple bearing supported blade grips and tail blade grips.
Machined center dual ball bearing swashplate for 120 degree CCPM.
Adjustable bell-hiller ratio allows tuning for preferred cyclic response.
Tunable flight characteristics for stability or speed.

Specifications:

Length: 1397mm
Height: 432mm
Width: 260mm
Main rotor diameter: 1580mm
Tail rotor diameter: 282.5mm
Main rotor blades: 690mm-720mm
Tail rotor blades: 95mm

CENTURY
HELICOPTER PRODUCTS

Thank You

Congratulations on the purchase of the latest Century Gasser series, the Radikal G30. You're about to build one of the world's lightest fully functional 3D aerobatic helicopters powered by the Zenoah 23 to 30cc gasoline engine. Be sure to read through and follow the instructions during the build.

Warning

This radio controlled model is not a toy! It is a precision machine requiring proper assembly and setup to avoid accidents. It is the responsibility of the owner to operate this product in a safe manner as it can inflict serious injury otherwise. It is recommended that if you are in doubt of your abilities, seek assistance from experienced radio control modelers and associations. Keep loose items that can get entangled in the rotor blades away from the main and tail blades, including loose clothing, hair, or other objects such as pencils and screwdrivers. Especially keep your hands away from the rotor blades. As manufacturer, we assume no liability for the use of this product.

Flight Guidelines

Please note this checklist is not intended to be a replacement for the content included in this instruction manual. Although it can be used as a quick start guide, we strongly suggest reading through this manual completely before proceeding.

- ☐ Always turn the transmitter on first
- ☐ Allow the gyro, and receiver to arm and initialize properly
- ☐ Do a pre-flight check making sure all electronics are working and look for any mechanical issues
- ☐ Fly the model
- ☐ Land the model
- ☐ Turn off the engine
- ☐ Always turn the transmitter off last

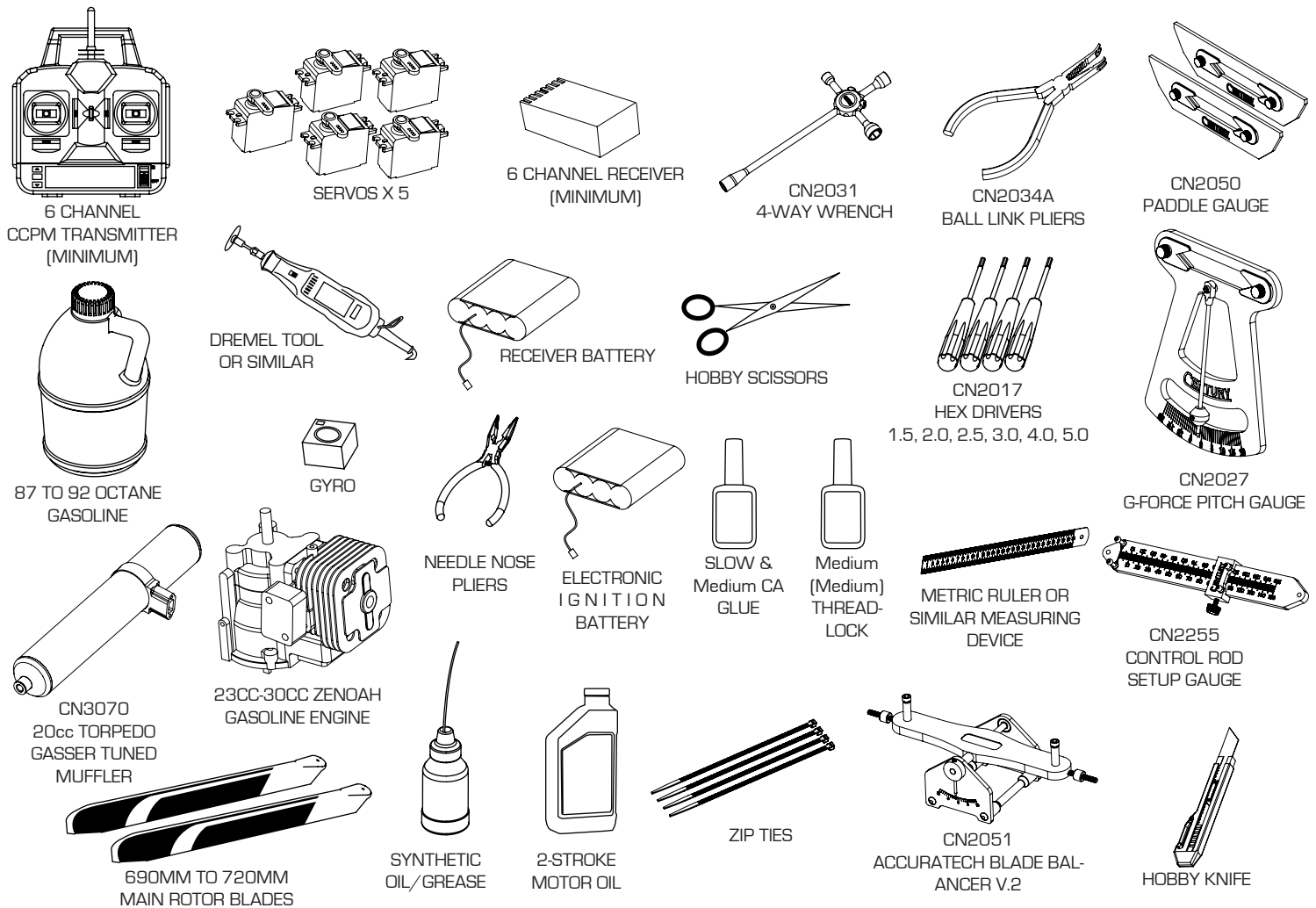
General Guidelines

Apply thread lock to all metal to metal thread contact points. Do not apply CA (cyanoacrylate) glue or thread lock to ny-lock nuts (metal nuts with plastic inserts). Diagrams indicated by bounding boxes for screws, bearings, etc. are illustrated at a 1-to-1 ratio. All other illustrations are not drawn to scale. Throughout this manual, you will find building tips. Please follow the tips and use common sense when building.

Pre-assembly Information

Upon opening the kit, all the major component parts are bagged for ease of assembly which correspond to the sections of the manual. Various assemblies have been pre-assembled however, only as a reference assembly. Final assembly is up to the user. Installation onto the particular parts, screws and nuts required for each step are packaged in the same bag as the parts. Be careful when opening each bag as not to lose any hardware. Care has been taken in filling and packing of each bag however mistakes do happen. If there is a parts shortage or missing hardware please contact us at:

Century Helicopter Products
1740-C Junction Ave.
San Jose, CA. 95112
www.centuryheli.com



Warranty Period

Century Helicopter Products warrants that the Products purchased (the "Product") will be free from defects in materials and workmanship 30 days from the date of purchase by the Purchaser.

Limited Warranty

(a) This warranty is limited to the original customer ("Purchaser") and is not transferable. REPAIR OR REPLACEMENT AS PROVIDED UNDER THIS WARRANTY IS THE EXCLUSIVE REMEDY OF THE PURCHASER. This warranty covers only those Products purchased from an authorized Century Helicopter Products dealer. Third party transactions are not covered by this warranty. Proof of purchase is required for warranty claims. Further, Century Helicopter Products reserves the right to change or modify this warranty without notice and disclaims all other warranties, express or implied.

(b) Limitations- CENTURY HELICOPTER PRODUCT MAKES NO WARRANTY OR REPRESENTATION, EXPRESS OR IMPLIED, ABOUT NON-INFRINGEMENT, MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OF THE PRODUCT. THE PURCHASER ACKNOWLEDGES THAT THEY ALONE HAVE DETERMINED THAT THE PRODUCT WILL SUITABLY MEET THE REQUIREMENTS OF THE PURCHASER'S INTENDED USE.

(c) Purchaser Remedy- Century Helicopter Products's sole obligation hereunder shall be that Century Helicopter Products will, at its option, (i) repair or (ii) replace, any Product determined by Century Helicopter Products to be defective. In the event of a defect, these are the Purchaser's exclusive remedies. Century Helicopter Products reserves the right to inspect any and all equipment involved in a warranty claim. Repair or replacement decisions are at the sole discretion of Century Helicopter Products. This warranty does not cover cosmetic damage or damage due to acts of God, accident, misuse, abuse, negligence, commercial use, or modification of or to any part of the Product. This warranty does not cover damage due to improper installation, operation, maintenance, or attempted repair by anyone other than Century Helicopter Products. Return of any goods by Purchaser must be approved by Century Helicopter Products before shipment.

General

- 1) I will not fly my model aircraft in sanctioned events, air shows or model flying demonstrations until it has been proven to be airworthy by having been previously, successfully flight tested.
- 2) I will not fly my model higher than approximately 400 feet within 3 miles of an airport without notifying the airport operator. I will give right-of-way and avoid flying in the proximity of full-scale aircraft. Where necessary, an observer shall be utilized to supervise flying to avoid having models fly in the proximity of full-scale aircraft.
- 3) Where established, I will abide by the safety rules for the flying site I use, and I will not willfully or deliberately fly my models in a careless, reckless and/or dangerous manner.
- 4) The maximum takeoff weight of a model is 55 pounds, except models flown under Experimental Aircraft rules.
- 5) I will not fly my model unless it is identified with my name and address or AMA number on or in the model. (This does not apply to models while being flown indoors.)
- 6) I will not operate models with metal-bladed propellers or with gaseous boosts, in which gases other than air enter their internal combustion engine(s); nor will I operate models with extremely hazardous fuels such as those containing tetranitromethane or hydrazine.

Radio Control

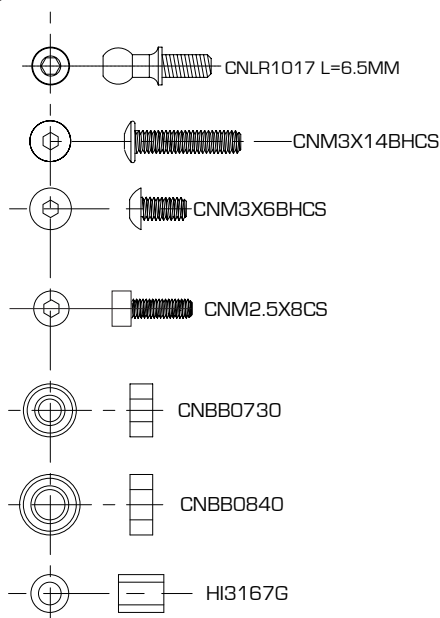
- 1) I will have completed a successful radio equipment ground range check before the first flight of a new or repaired model.
 - 2) I will not fly my model aircraft in the presence of spectators until I become a qualified flier, unless assisted by an experienced helper.
 - 3) At all flying sites a straight or curved line(s) must be established in front of which all flying takes place with the other side for spectators. Only personnel involved with flying the aircraft are allowed at or in front of the flight line. Intentional flying behind the flight line is prohibited.
 - 4) I will operate my model using only radio control frequencies currently allowed by the Federal Communications Commission. (Only properly licensed Amateurs are authorized to operate equipment on Amateur Band frequencies.)
 - 5) Flying sites separated by three miles or more are considered safe from site-to site interference, even when both sites use the same frequencies. Any circumstances under three miles separation require a frequency management arrangement, which may be either an allocation of specific frequencies for each site or testing to determine that freedom from interference exists. Allocation plans or interference test reports shall be signed by the parties involved and provided to AMA Headquarters. Documents of agreement and reports may exist between
-
- (1) Two or more AMA Chartered Clubs, (2) AMA clubs and individual AMA members not associated with AMA Clubs, or (3) two or more individual AMA members.
 - 6) For Combat, distance between combat engagement line and spectator line will be 500 feet per cubic inch of engine displacement. (Example: .40 engine = 200 feet.); electric motors will be based on equivalent combustion engine size. Additional safety requirements will be per the RC Combat section of the current Competition Regulations.
 - 7) At air shows or model flying demonstrations, a single straight line must be established, one side of which is for flying, with the other side for spectators.
 - 8) With the exception of events flown under AMA Competition rules, after launch, except for pilots or helpers being used, no powered model may be flown closer than 25 feet to any person.
 - 9) Under no circumstances may a pilot or other person touch a powered model in flight.

BAG 1

Do not open all the bags prior to starting assembly. Open the bags step by step as you go through the instruction manual. The components are bagged to make assembly easier. The next few pages will pertain to the assembly of the head. Please follow the instructions based on the head type you own. Make sure to apply threadlock to any screws going into metal.

Insert one ball bearing into each bearing cup and insert into the offset plate. Apply one small drop of slow cyanoacrylate glue (Slow CA) to the joint between the backside of the bearing cup and the offset plate. Insert one ball bearing into each tie bar. Using an available M3 socket cap screw, form threads into both ends of the tie bars. Insert one M3x6 button head screw through the right side hole of the offset plate and thread into one tie bar. Make two identical subassemblies. Note that the bearing cups face outwards from the head block. Insert one M3x14 button head screw through the tie bar bearing, slide one steel spacer and carefully apply Medium threadlock to the exposed threads and insert into the right side of the head block. Do not overtighten. Repeat for the second sub-assembly. Once complete apply a small amount of slow cyanoacrylate glue and insert one CNLR1020 special long thread ball into each offset plate to complete the assembly.

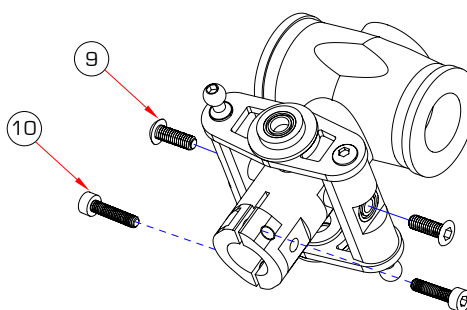
Take special care when pressing in these bearings. Do not press in on the inner sleeve of the bearing



Do not secure all the screws until lining up the components in the following steps.

Use medium strength thread lock on all metal to metal screw contact points.

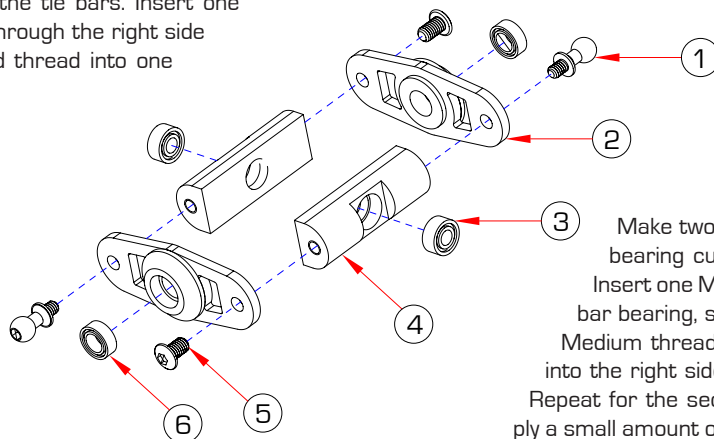
Use medium CA (Cyanoacrylate) glue on metal to plastic threads



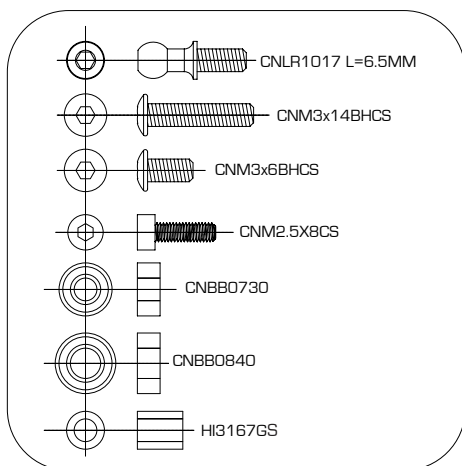
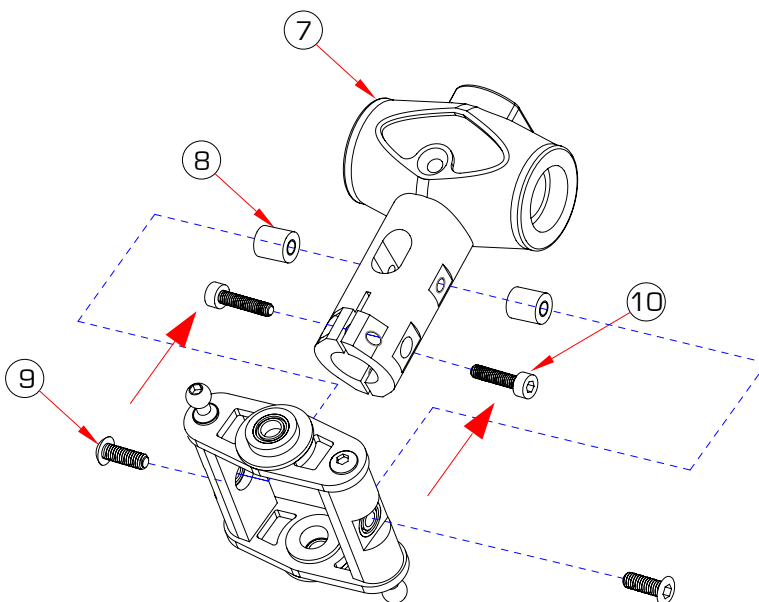
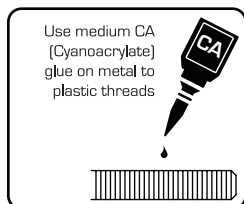
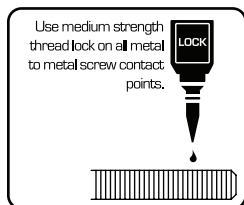
| No. | Part # | Description | Qty |
|-----|-------------|------------------------------------|-----|
| 1 | CNLR1017 | M3 Ball Link(M3 球头螺丝) | 2 |
| 2 | HI3167B | Seesaw Offset Plates(平衡杆固定片) | 2 |
| 3 | CNBB0730 | 3x7x3 Ball Bearing(轴承) | 2 |
| 4 | HI3167G | Seesaw Tie Bar Set(平衡杆控制臂) | 2 |
| 5 | CNM3X6BHCS | M3x6 Button Head Cap Screws(伞头螺丝) | 2 |
| 6 | CNBB0840 | 4x8x3 Ball Bearing(轴承) | 2 |
| 7 | HI6160A | NX Rotor Head Yoke(主旋翼中心座) | 1 |
| 8 | HI3167GS | 3X5X6 Spacers(铁套) | 2 |
| 9 | CNM3X14BHCS | M3x14 Button Head Cap Screws(伞头螺丝) | 2 |
| 10 | CNM2.5X8CS | M2.5x8 Cap Screws(杯头螺丝) | 2 |

BAG 1

Insert one ball bearing into each bearing cup and insert into the offset plate. Apply one small drop of slow cyanoacrylate glue (Slow CA) to the joint between the backside of the bearing cup and the offset plate. Insert one ball bearing into each tie bar. Using an available M3 socket cap screw, form threads into both ends of the tie bars. Insert one M3x6 button head screw through the right side hole of the offset plate and thread into one tie bar.



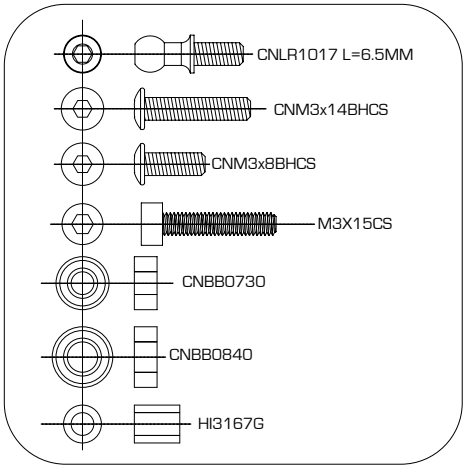
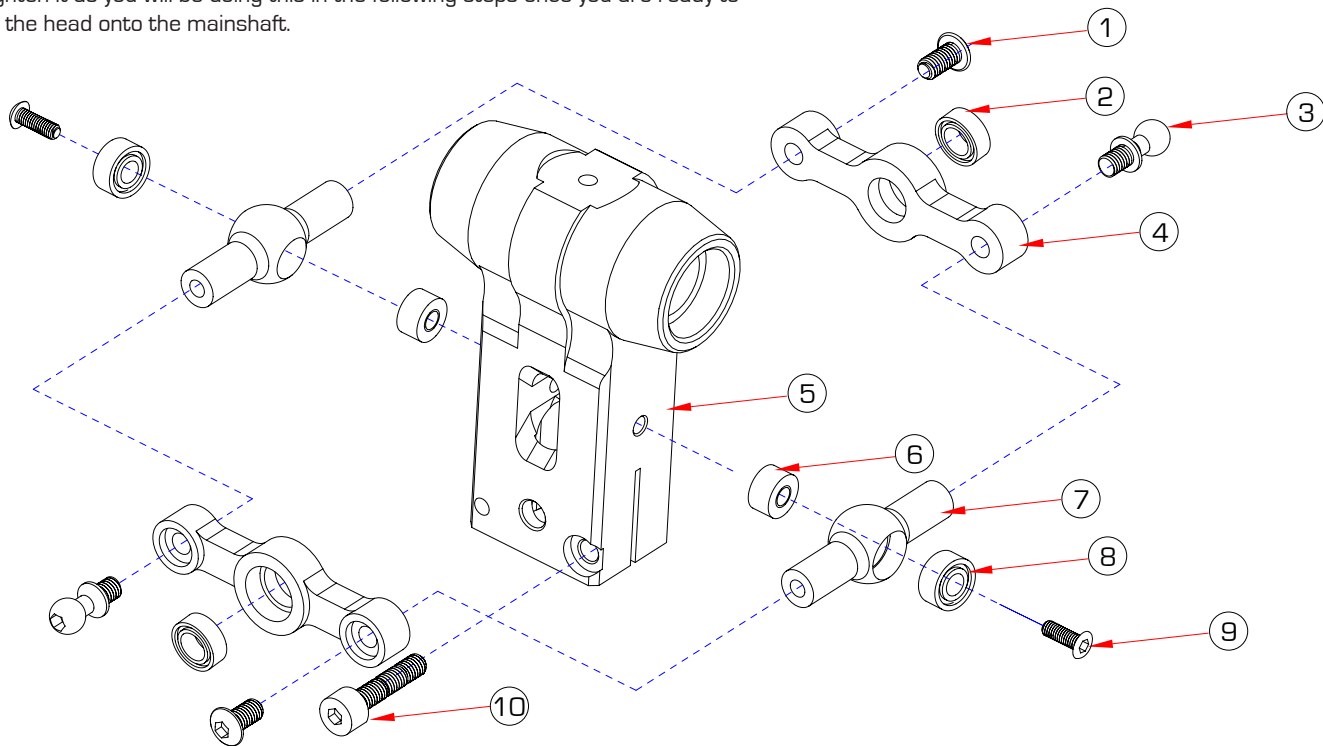
Make two identical subassemblies. Note that the bearing cups face outwards from the head block. Insert one M3x14 button head screw through the tie bar bearing, slide one steel spacer and carefully apply Medium threadlock to the exposed threads and insert into the right side of the head block. Do not overtighten. Repeat for the second sub-assembly. Once complete apply a small amount of slow cyanoacrylate glue and insert one CNLR1020 special long thread ball into each offset plate to complete the assembly.



| No. | Part # | Description | Qty |
|-----|-------------|------------------------------------|-----|
| 1 | CNLR1017 | M3 Ball Link[M3 球头螺丝] | 2 |
| 2 | HI3167B | Seesaw Offset Plates[平衡杆固定片] | 2 |
| 3 | CNBB0730 | 3x7x3 Ball Bearing[轴承] | 2 |
| 4 | HI3167G | Seesaw Tie Bar Set[平衡杆控制臂] | 2 |
| 5 | CNM3X6BHCS | M3x6 Button Head Cap Screws[伞头螺丝] | 2 |
| 6 | CNBB0840 | 4x8x3 Ball Bearing[轴承] | 2 |
| 7 | CN2511 | Metal Rotor Head Yoke[主旋翼中心座] | 1 |
| 8 | HI3167GS | 3X5X6 Spacers [铁套] | 2 |
| 9 | CNM3X14BHCS | M3x14 Button Head Cap Screws[伞头螺丝] | 2 |
| 10 | CNM2.5X8CS | M2.5x8 Cap Screws[杯头螺丝] | 2 |

BAG 1

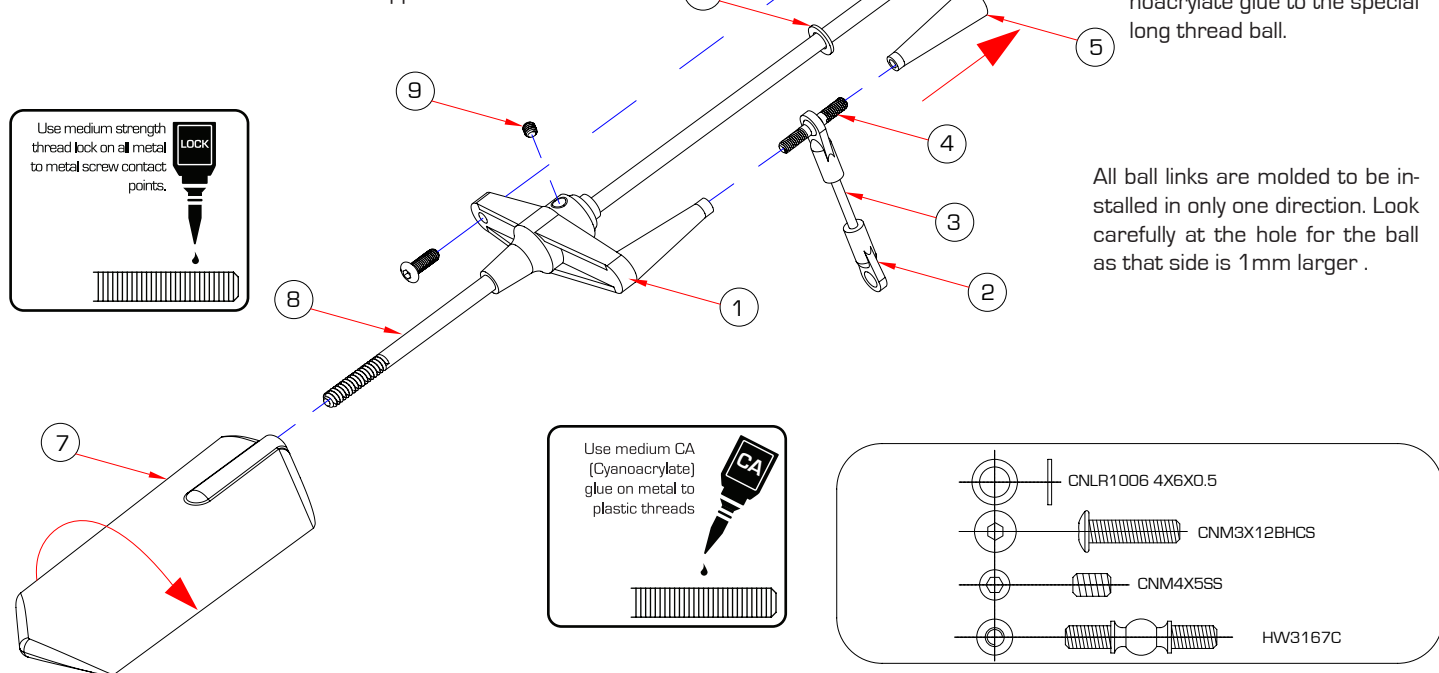
Apply Red threadlock to the outer race of one 4x8x3 ball bearing and install the bearing into the bearing cup of the offset plate. Apply Red threadlock to the outer race of one 3x7x3 bearing and insert it into the seesaw tie bar. Attach the seesaw tiebar and threadlock the threaded ball and M3x8 button head screw. Attach the completed end to the headblock making sure you have the seesaw tie bar spacer. Attach using the completed end using an M3x14 button head screw. Complete the other end around the headblock. Install the M3x15 cap screw however do not tighten it as you will be doing this in the following steps once you are ready to install the head onto the mainshaft.



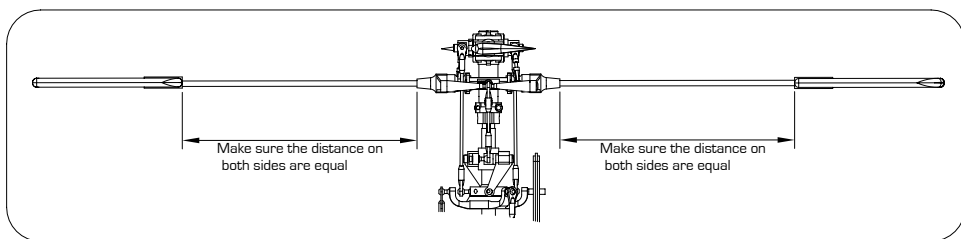
| No. | Part # | Description | Qty |
|-----|-------------|-------------------------------------|-----|
| 1 | CNM3X8BHCS | M3x8 Button Head Cap Screws[伞头螺丝] | 2 |
| 2 | CNBB0840 | 4x8x3 Ball Bearing[轴承] | 2 |
| 3 | CNLR1017 | M3 Ball Link[M3 球头螺丝] | 2 |
| 4 | CN2511C | Seesaw Offset Plates[平衡杆固定片] | 2 |
| 5 | CN2511B | NX Rotor Head Yoke[主旋翼中心座] | 1 |
| 6 | HW6205 | 3x5x3 Spacers[铁套] | 2 |
| 7 | CN2511C | Seesaw Tie Bar Set[平衡杆控制臂] | 2 |
| 8 | CNBB0730 | 3x7x3 Ball Bearing[轴承] | 2 |
| 9 | CNM3X14BHCS | M3x14 Button Head Cap Screws[伞头螺丝] | 2 |
| 10 | CNM3X15CS | M3x15 Cap Screws[杯头螺丝] | 2 |

BAG 1

Pushrod assembly (parts 2 through 4) is already assembled but check that the length is actually 43mm (center to center). As the pushrods are built and installed they should be checked for tightness. Press one ball link onto each double studded steel ball, making sure that pressure is applied from the side of the ball link with the circle mark. While holding one flybar control arm, apply a small amount of slow cyanoacrylate glue and thread one end of the double studded steel ball into each standoff. When it becomes difficult to turn with fingers, apply slow CA to the threads and start screwing in the tapered control arm stand-off on the other end of the ball. Slide and center the flybar through the head assembly. Carefully look at the flybar control arm assemblies from the previous step and notice that when installed correctly, the securing set screw is on top. Insert one M4x6x0.5 micro washer #CNLR1006 against each bearing then slide the control arm halves onto each side, so that they match together and the set screw remains on top. Insert one M3x12 button head socket screw to secure the opposite standoff.

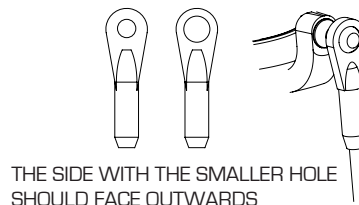


Loosely tighten the M4x5 set screws into the round aluminum inserts aligned with the flat spots on the flybar. Tighten both set screws, one at a time using Medium threadlock. Make a pencil mark 5mm past the threads on both ends of the flybar. Thread the flybar paddles onto the flybar until the mark is reached and align the paddles parallel. Again using the ruler, rotate one paddle or the other to get equal distances while remembering the leading edge of the paddles will be turning clockwise.



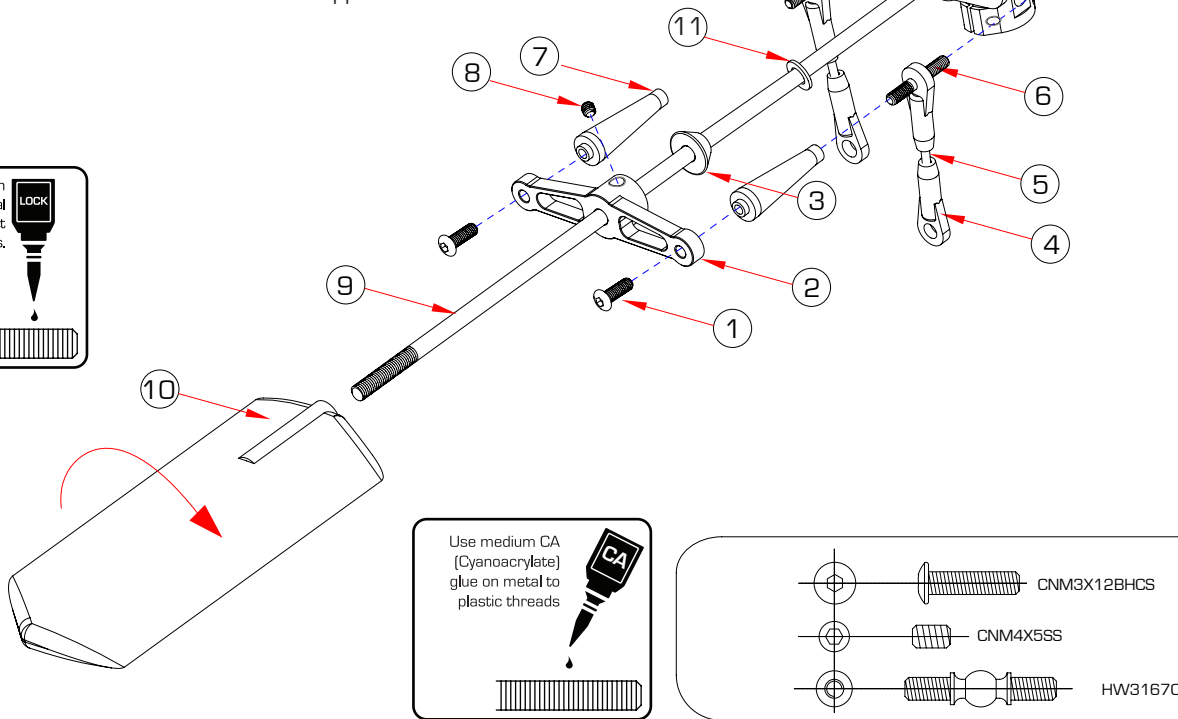
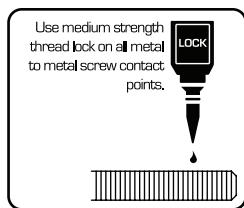
| No. | Part # | Description | Qty |
|-----|-------------|---------------------------------------|-----|
| 1 | HI3176C | Symmetrical Flybar Arm [平衡翼控制臂] | 2 |
| 2 | HI6145 | Ball Link Set(26 Long,4 Short)[球头连接头] | 4 |
| 3 | HW6192 | Pushrod Set[拉杆] | 2 |
| 4 | HI3176C | M3 Double Studded Steel Ball[M3球头双牙螺] | 2 |
| 5 | HI3176C | Seesaw Tie Bars[平衡翼控制臂] | 2 |
| 6 | CNM3X12BHCS | M3x12 Button Head Cap Screws[圆头螺丝] | 2 |
| 7 | HI6179B1 | Flybar Paddles[平衡翼] | 2 |
| 8 | HW6173A | 4mm Flybar[平衡杆] | 1 |
| 9 | CNM4X5SS | M4x5 Socket Head Set Screw[无头内六角螺] | 2 |
| 10 | CNLR1006 | M4x6x0.5 Washer[平面垫片] | 2 |

NOTICE SIZE OF HOLES ON BALL LINKS

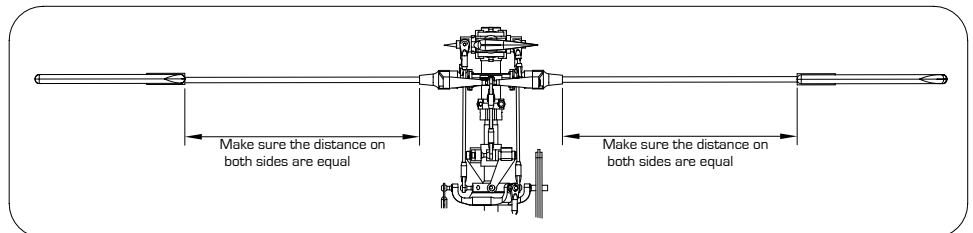


BAG 1

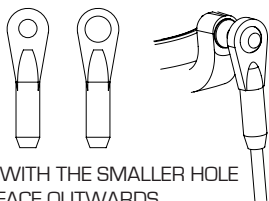
Pushrod assembly (parts 4 through 6) is already assembled but check that the length is actually 43mm [center to center]. As the pushrods are built and installed they should be checked for tightness. Press one ball link onto each double studded steel ball, making sure that pressure is applied from the side of the ball link with the circle mark. While holding one flybar control arm, apply a small amount of Medium threadlock and thread one end of the double studded steel ball into each standoff. Do the same with the other flybar control arm tiebar. Slide and center the flybar through the head assembly. Carefully look at the flybar control arm assemblies from the previous step and notice that when installed correctly, the securing set screw is on top. Insert one flybar control arm cushion against each bearing and then slide the control arm halves onto each side so that they match together and the set screw remains on top. Insert one M3x12 button head socket screw to secure the opposite standoff.



Loosely tighten the M4x5 set screws into the arm aligned with the flat spots on the flybar. Tighten both set screws, one at a time using Medium threadlock. Make a pencil mark 5mm past the threads on both ends of the flybar. Thread the flybar paddles onto the flybar until the mark is reached and align the paddles parallel. Again using the ruler, rotate one paddle or the other to get equal distances while remembering the leading edge of the paddles will be turning clockwise.



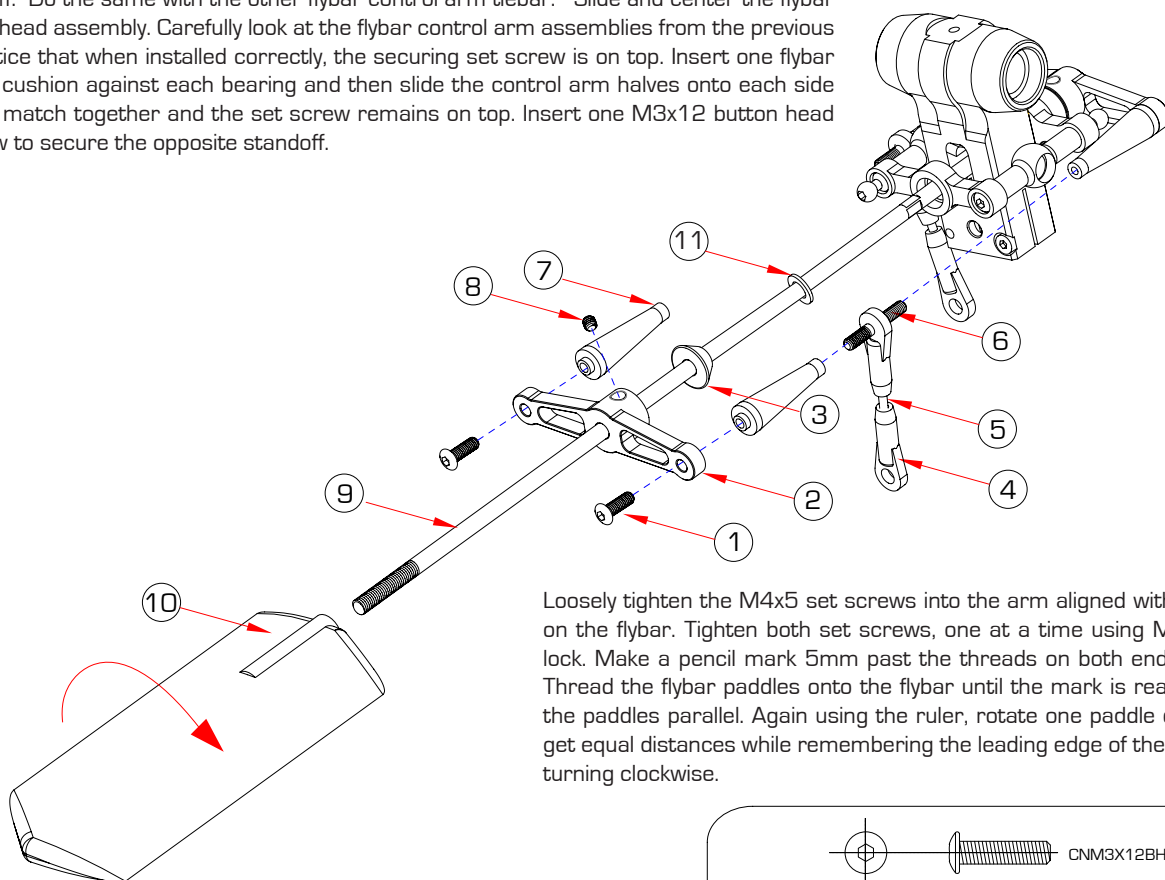
NOTICE SIZE OF HOLES ON BALL LINKS



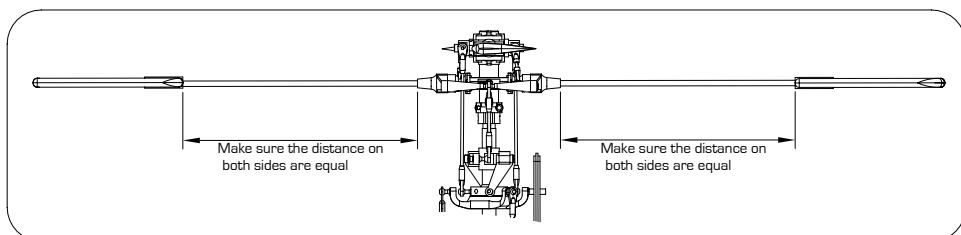
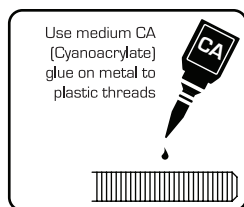
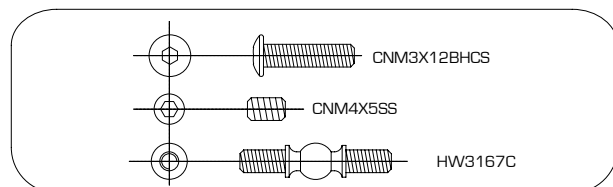
| No. | Part # | Description | Qty |
|-----|-------------|--------------------------------------|-----|
| 1 | CNM3X12BHCS | M3x12 Button Head Cap Screws [圆头螺丝] | 4 |
| 2 | HW6176SA | Flybar Control Arm [金属平衡翼控制臂] | 2 |
| 3 | HW6176SA | Flybar Control Arm Spacer [平衡翼控制臂垫块] | 2 |
| 4 | HI6145 | Ball Link Set [球头连接头] | 2 |
| 5 | HW6192 | Pushrod Set [拉杆] | 2 |
| 6 | HW6176SA | Double Studded Steel Ball [M3球头双牙螺丝] | 2 |
| 7 | HW6176SA | Flybar Control Arm [金属平衡翼控制臂] | 4 |
| 8 | CNM4X5SS | M4x5 Socket Head Set Screw [无头内六角螺丝] | 2 |
| 9 | HW6173A | 4mm Flybar [平衡杆] | 1 |
| 10 | HI6179B1 | Flybar Paddles [平衡翼] | 2 |
| 11 | CNLR1006 | M4x6x0.5 Washer [平面垫片] | 2 |

BAG 1

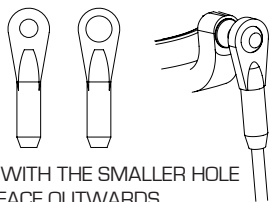
Pushrod assembly [parts 4 through 6] is already assembled but check that the length is actually 43mm (center to center). As the pushrods are built and installed they should be checked for tightness. Press one ball link onto each double studded steel ball, making sure that pressure is applied from the side of the ball link with the circle mark. While holding one flybar control arm, apply a small amount of Medium threadlock and thread one end of the double studded steel ball into each standoff. Do the same with the other flybar control arm tiebar. Slide and center the flybar through the head assembly. Carefully look at the flybar control arm assemblies from the previous step and notice that when installed correctly, the securing set screw is on top. Insert one flybar control arm cushion against each bearing and then slide the control arm halves onto each side so that they match together and the set screw remains on top. Insert one M3x12 button head socket screw to secure the opposite standoff.



Loosely tighten the M4x5 set screws into the arm aligned with the flat spots on the flybar. Tighten both set screws, one at a time using Medium threadlock. Make a pencil mark 5mm past the threads on both ends of the flybar. Thread the flybar paddles onto the flybar until the mark is reached and align the paddles parallel. Again using the ruler, rotate one paddle or the other to get equal distances while remembering the leading edge of the paddles will be turning clockwise.



NOTICE SIZE OF HOLES ON BALL LINKS



THE SIDE WITH THE SMALLER HOLE SHOULD FACE OUTWARDS

| No. | Part # | Description | Qty |
|-----|-------------|---------------------------------------|-----|
| 1 | CNM3X12BHCS | M3x12 Button Head Cap Screws(圆头螺丝) | 4 |
| 2 | HW6176SA | Flybar Control Arm(金属平衡翼控制臂) | 2 |
| 3 | HW6176SA | Flybar Control Arm Spacer(平衡翼控制臂垫块) | 2 |
| 4 | HI6145 | Ball Link Set(球头连接头) | 2 |
| 5 | HW6192 | Pushrod Set(拉杆) | 2 |
| 6 | HI3167C | M3 Double-sided Ball Screw(M3 球头双牙螺丝) | 2 |
| 7 | HW6176SA | Flybar Control Arm(金属平衡翼控制臂) | 4 |
| 8 | CNM4X5SS | M4x5 Socket Head Set Screw(无头内六角螺丝) | 2 |
| 9 | HW6173A | 4mm Flybar(平衡杆) | 1 |
| 10 | HI6179B1 | Flybar Paddles(平衡翼) | 2 |
| 11 | CNLR1006 | M4x6x0.5 Washer(平面垫片) | 2 |

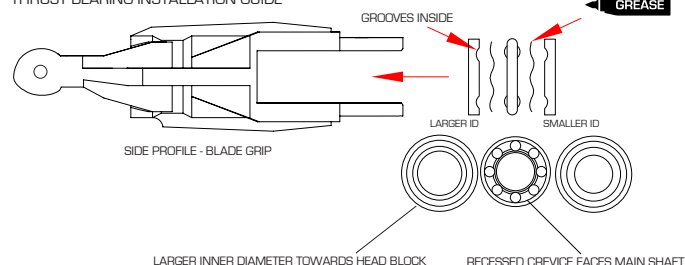
BAG 1

| BELL MIXER RATIOS | | STYLE | |
|-------------------|---|---------|------------|
| ● | ○ | ● 1:1.6 | 3D |
| ○ | ● | ● 1:1.3 | 3D & SPORT |

Using an available M3 screw, carefully form the threads in the blade grip arm. Slide the M3x18 screw through the bell mixer arm from the flat side, add one M3x5x3 spacer and apply a drop of Slow Cyanoacrylate glue or Epoxy glue to the end of the threads before installing into the blade grip. Tighten the bolt until there is no end to end movement, but do not overtighten the bolt as you can strip out the hole. Make two assemblies.

Do not overtighten as you can strip the blade grip.

THRUST BEARING INSTALLATION GUIDE

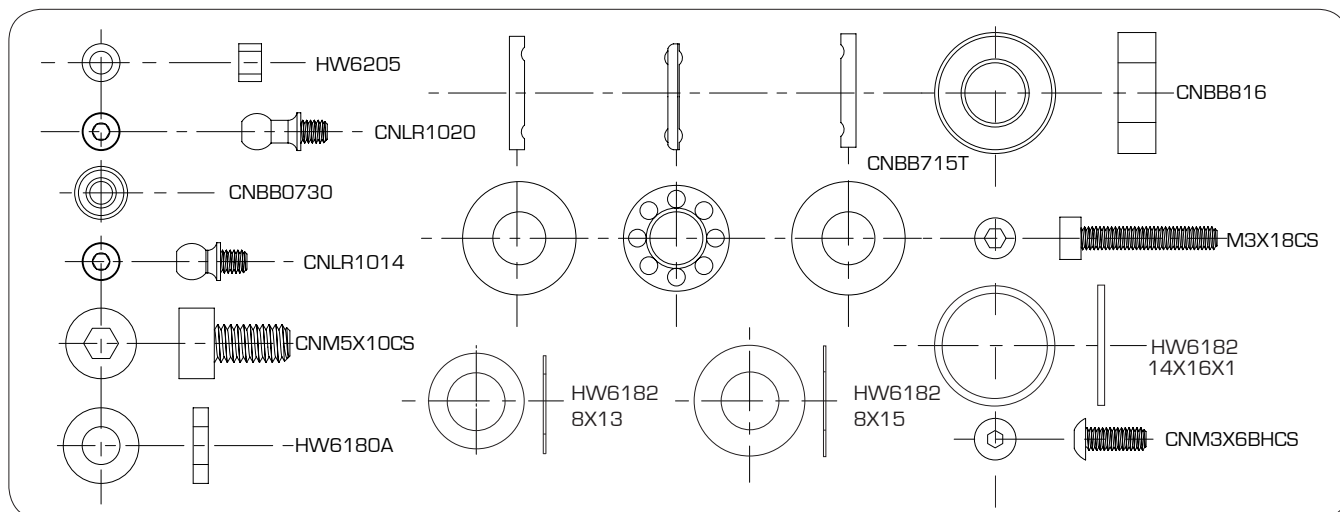


There are two types of dampeners provided. The hard black plastic dampeners (HI6520A) should only be used for hard 3D flying. If using the hard plastic dampeners, use only one of the (HW6182) 8x13 spacer. Press in the head dampeners into the rotor head block. Lubricate the inside surface of each damper with light oil.

Press one M8x16 ball bearing into both ends of each main rotor blade grip. Slide one M14 thrust washer against the bearing closest to the main rotor blade. Make sure that the bearing and the thrust washer are properly seated into the deep end of the blade grip. If necessary use a socket that matches the outside diameter of the bearing and press into position.

The 8x13 washer/spacer (#15) is used to adjust tightness of the head. If the head is binding after tightening the M5 bolt (#6), remove one or more spacers from each side. Make two assemblies.

Press one M3x7 flanged ball bearing into one side followed by one M3x5 spacer and another flanged bearing from the opposite side. If the bearing is tight, lightly sand the bell mixer and use Red threadlock to bond the bearing in place. Install the CNLR1014 short steel ball into the single hole side of the bell mixer and install the CNLR1020 medium steel ball using Medium threadlock. Install the medium steel ball according to the table to suit your flying preference. Use the inner hole for sport flying. Make two assemblies.



| No. | Part # | Description | Qty | No. | Part # | Description | Qty |
|-----|-----------|--|-----|-----|-----------|--|-----|
| 1 | HI6189A | Enhanced Metal Bell Mixer Set (主桨控制臂) | 2 | 10 | CNBB816 | 8x16x5 Bearing (轴承) | 4 |
| 2 | HW6205 | M3x5x3 Spacer (垫圈) | 2 | 11 | HI6184A | NX Main Rotor Blade Grips (主旋翼夹片) | 2 |
| 3 | CNLR1020 | Stainless Ball, 3mm Thread, Medium (M3球头螺丝) | 2 | 12 | HW6205 | M3x5x3 Spacer (垫圈) | 2 |
| 4 | CNBB0730 | 3x7x3 Ball Bearing (轴承) | 4 | 13 | CNM3x18CS | M3x18 Socket Head Cap Screws (有头内六角螺丝) | 2 |
| 5 | CNLR1014 | Stainless Ball, 3mm Thread, Short (M3球头螺丝) | 2 | 14 | HW6182 | 8x15 Head Shim Set (平面垫片) | 2 |
| 6 | CNM5X10CS | M5x10 Socket Head Cap Screws (有头内六角螺丝) | 2 | 15 | HW6182 | 8x13 Head Shim Set (平面垫片) | 6 |
| 7 | HW6180A | M5x10x1 Feathering Shaft with Center Ball (垫圈) | 2 | 16 | CNBB816 | 8x16x5 Bearing (轴承) | 4 |
| 8 | CNBB715T | 7x15x5 Blade Grip Thrust Ball Bearing (止推轴承) | 2 | 17 | HI6181B | Hard Head Dampeners Black | 2 |
| 9 | HW6183 | 14X16X1 Head Shim Set (平面垫片) | 2 | 17 | HI6520A | Hard Plastic Dampeners | 2 |

BAG 1

BELL MIXER RATIOS

| | |
|-----|---------|
| ● ○ | ● 1:1.6 |
| ○ ● | ● 1:1.3 |

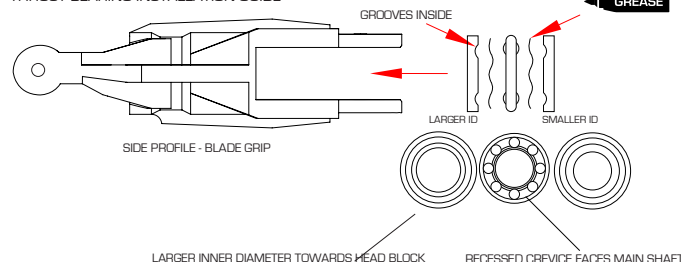
Using an available M3 screw, carefully form the threads in the blade grip arm. Slide the M3x18 screw through the bell mixer arm from the flat side, add one M3x5x3 spacer and apply a drop of Slow Cyanoacrylate glue or Epoxy glue to the end of the threads before installing into the blade grip. Tighten the bolt until there is no end to end movement, but do not overtighten the bolt as you can strip out the hole. Make two assemblies.

Do not over-tighten as you can strip the blade grip.

There are two types of dampeners provided. The hard black plastic dampeners (HI6520A) should only be used for hard 3D flying. If using the hard plastic dampeners, use only one of the (HW6182) 8x13 spacer. Press in the head dampeners into the rotor head block. Lubricate the inside surface of each damper with light oil. Press one M8x16 ball bearing into both ends of each main rotor blade grip. Slide one M14 thrust washer against the bearing closest to the main rotor blade. Make sure that the bearing and the thrust washer are properly seated into the deep end of the blade grip. If necessary use a socket that matches the outside diameter of the bearing and press into position. The 8x13 washer/spacer (#15) is used to adjust tightness of the head. If the head is binding after tightening the M5 bolt (#6), remove one or more spacers from each side. Make two assemblies.

Press one M3x7 flanged ball bearing into one side followed by one M3x5 spacer and another flanged bearing from the opposite side. If the bearing is tight, lightly sand the bell mixer and use Red threadlock to bond the bearing in place. Install the CNLR1014 short steel ball into the single hole side of the bell mixer and install the CNLR1020 medium steel ball using Blue threadlock. Install the medium steel ball according to the table to suit your flying preference. Make two assemblies.

THRUST BEARING INSTALLATION GUIDE



CNLR1014

CNLR1020

CNM3X6BHCS

M3X18CS

CNM5X10CS

HW6205 3X5X3

CNBB0730

HW6180A
M5X10X1

HW6182 8X15X0.5

CNBB715T

CNBB816

HW6182
M14X16X1

HW6182 8X13X0.5

| No. | Part # | Description | Qty |
|-----|-----------|---|-----|
| 1 | HI6189A | Bell Mixer Arm(混控臂) | 2 |
| 2 | HW6205 | M3x5x3 Spacer(垫圈) | 2 |
| 3 | CNLR1020 | M3 Ball Link(M3球头螺) | 2 |
| 4 | CNBB0730 | 3x7x3 Bearing(轴承) | 4 |
| 5 | CNLR1014 | M3 Ball Link(M3球头螺) | 2 |
| 6 | CNM5X10CS | M5x10 Cap Screws(杯头螺) | 2 |
| 7 | HW6180A | M5x10x1 Spacer(垫圈) | 2 |
| 8 | CNBB715T | 7x15x5 Thrust Blade Grip Ball Bearing(止推轴承) | 2 |
| 9 | HW6182 | M13x16x1 Washer(平面垫片) | 2 |
| 10 | CNBB816 | 8x16x5 Bearing(轴承) | 4 |
| 11 | HI6184A | NX Main Rotor Blade Grips(主旋翼夹片) | 2 |
| 12 | HW6205 | M3x5x3 Spacer(垫圈) | 2 |
| 13 | CNM3X18CS | M3x18 Cap Screws(杯头内六角螺) | 2 |
| 14 | HW6182 | 8x15 Washer(平面垫片) | 2 |
| 15 | HW6182 | 8x13 Washer(平面垫片) | 6 |
| 16 | HI6181B | Hard Head Dampeners | 2 |
| 17 | HW6180AS | Feathering Shaft | 1 |
| 17 | HI6520A | Hard Plastic Dampeners | 2 |

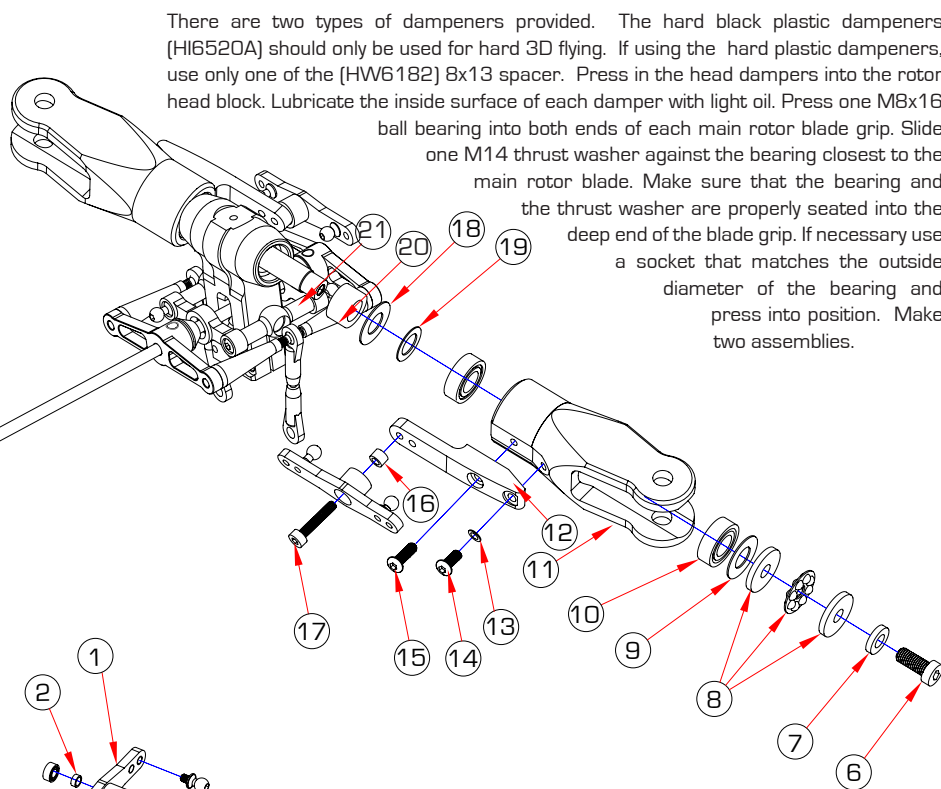
BAG 1

BELL MIXER RATIOS

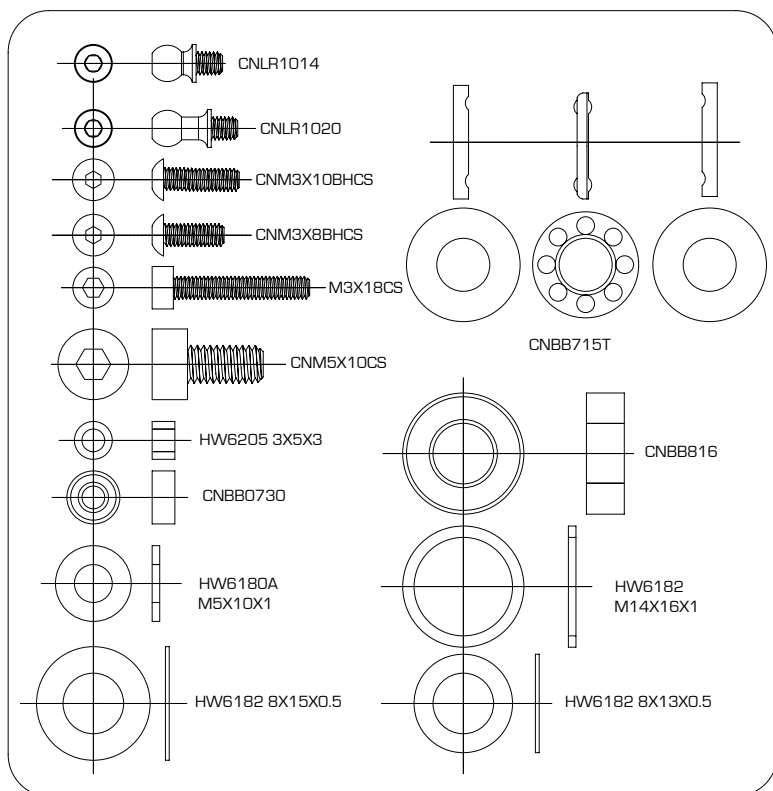
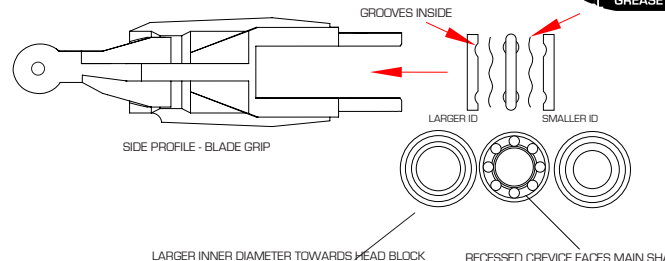
| | |
|-----|---------|
| ● ○ | ● 1:1.6 |
| ○ ● | ● 1:1.3 |

Drop some Medium threadlock into the side of the blade grip. Place the grip arm over the grip and install the M3 button head screws as shown with washer. Slide the M3x18 button head screw through the bell mixer arm from the flat side, add one M3x5x3 spacer and apply a drop of Medium threadlock to the end of the threads before installing into the blade grip. Tighten the bolt until there is no end to end movement, but do not overtighten the bolt as you can strip out the hole or bind the bearings. Make two assemblies.

Press one M3x7 flanged ball bearing into one side followed by one M3x5 spacer and another flanged bearing from the opposite side. If the bearing is tight, lightly sand the bell mixer and use Red threadlock to bond the bearing in place. Install the CNLR1014 short steel ball into the single hole side of the bell mixer and install the CNLR1020 medium steel ball using Blue threadlock. Install the medium steel ball according to the table to suit your flying preference. Make two assemblies.



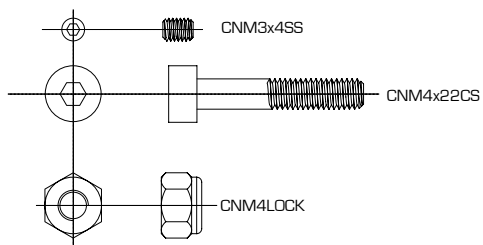
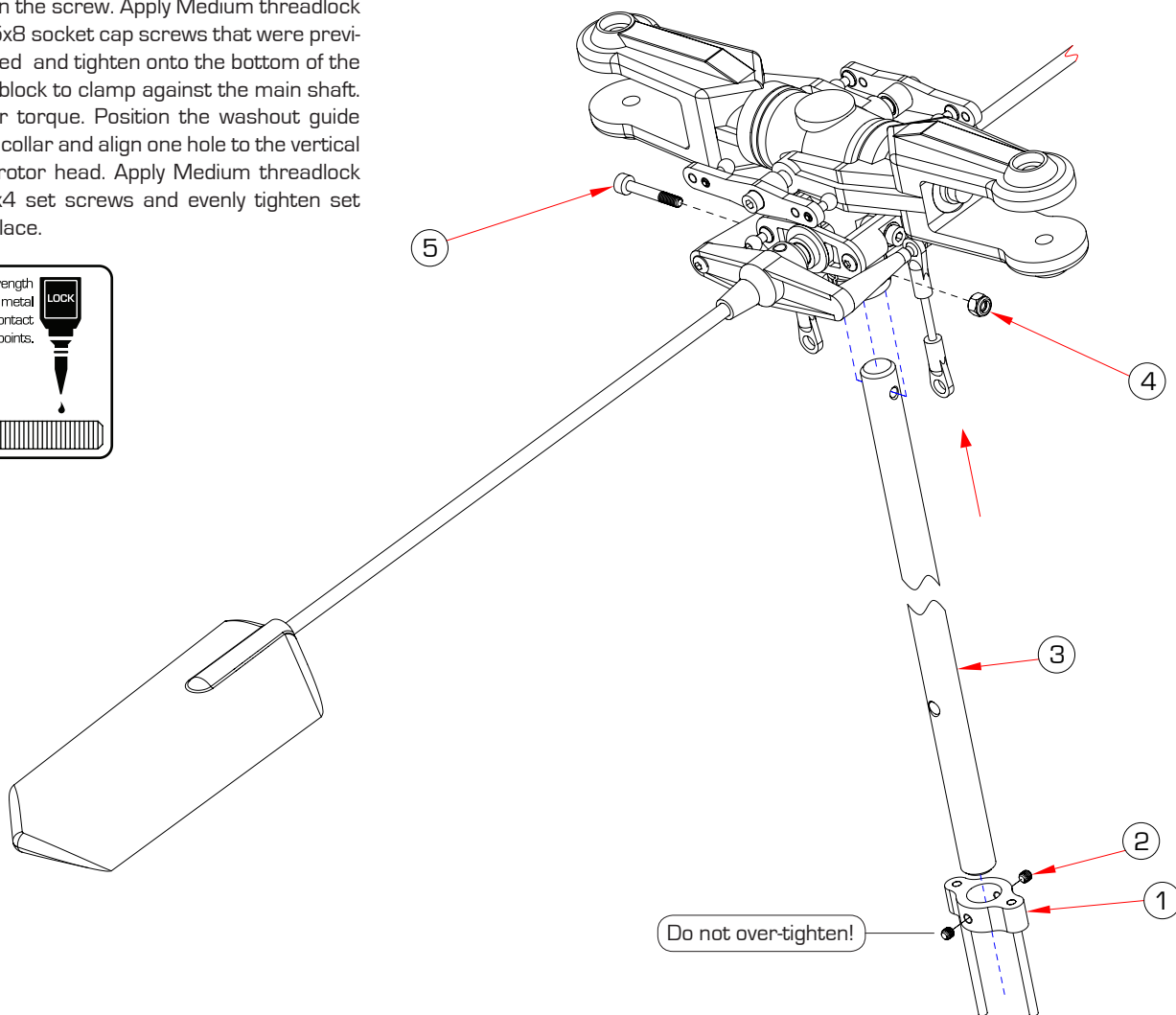
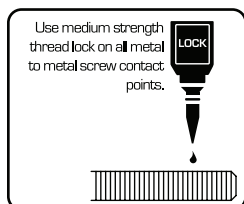
THRUST BEARING INSTALLATION GUIDE



| No. | Part # | Description | Qty |
|-----|-------------|---|-----|
| 1 | HI6189 | Bell Mixer Arm(混控臂) | 2 |
| 2 | HW6205 | M3x5x3 Spacer(垫圈) | 2 |
| 3 | CNLR1020 | M3 Ball Link[M3球头螺丝] | 2 |
| 4 | CNBB0730 | 3x7x3 Bearing(轴承) | 4 |
| 5 | CNLR1014 | M3 Ball Link[M3球头螺丝] | 2 |
| 6 | CNM5X10CS | M5x10 Cap Screws(杯头螺丝) | 2 |
| 7 | HW6180A | M5x10x1 Spacer(垫圈) | 2 |
| 8 | CNBB715T | 7x15x5 Thrust Blade Grip Ball Bearing(止推轴承) | 2 |
| 9 | HW6182 | M13x16x1 Washer(平面垫片) | 2 |
| 10 | CNBB816 | 8x16x5 Bearing(轴承) | 4 |
| 11 | CN2510B-1 | Metal Main Rotor Blade Grips[主旋翼夹片] | 2 |
| 12 | CN2510B-2 | Metal Main Blade Grip Control Arm[主旋翼夹片摆臂] | 2 |
| 13 | CNLR1003 | Washer(垫片)3X5X0.5 | 2 |
| 14 | CNM3X8BHCS | M3x8 Button Head Cap Screws(伞头螺丝) | 2 |
| 15 | CNM3X10BHCS | M3x10 Button Head Cap Screws(伞头螺丝) | 2 |
| 16 | HW6205 | M3x5x3 Spacer(垫圈) | 2 |
| 17 | CNM3x18CS | M3x18 Cap Screws(杯头内六角螺丝) | 2 |
| 18 | HW6182 | 8x15 Washer(平面垫片) | 2 |
| 19 | HW6182 | 8x13 Washer(平面垫片) | 2 |
| 20 | HI6181B | Hard Head Dampeners | 2 |
| 21 | HW6180AS | Feathering Shaft | 1 |
| 17 | HI6520A | Hard Plastic Dampeners | 2 |

BAG 1

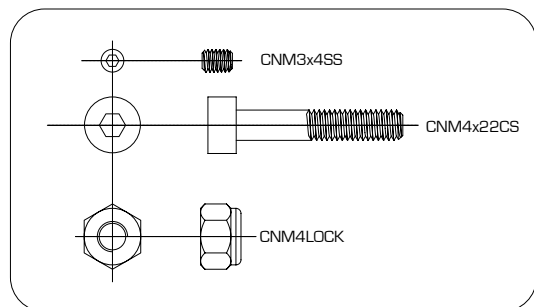
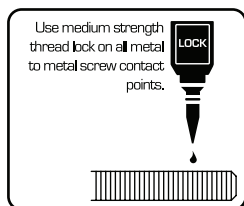
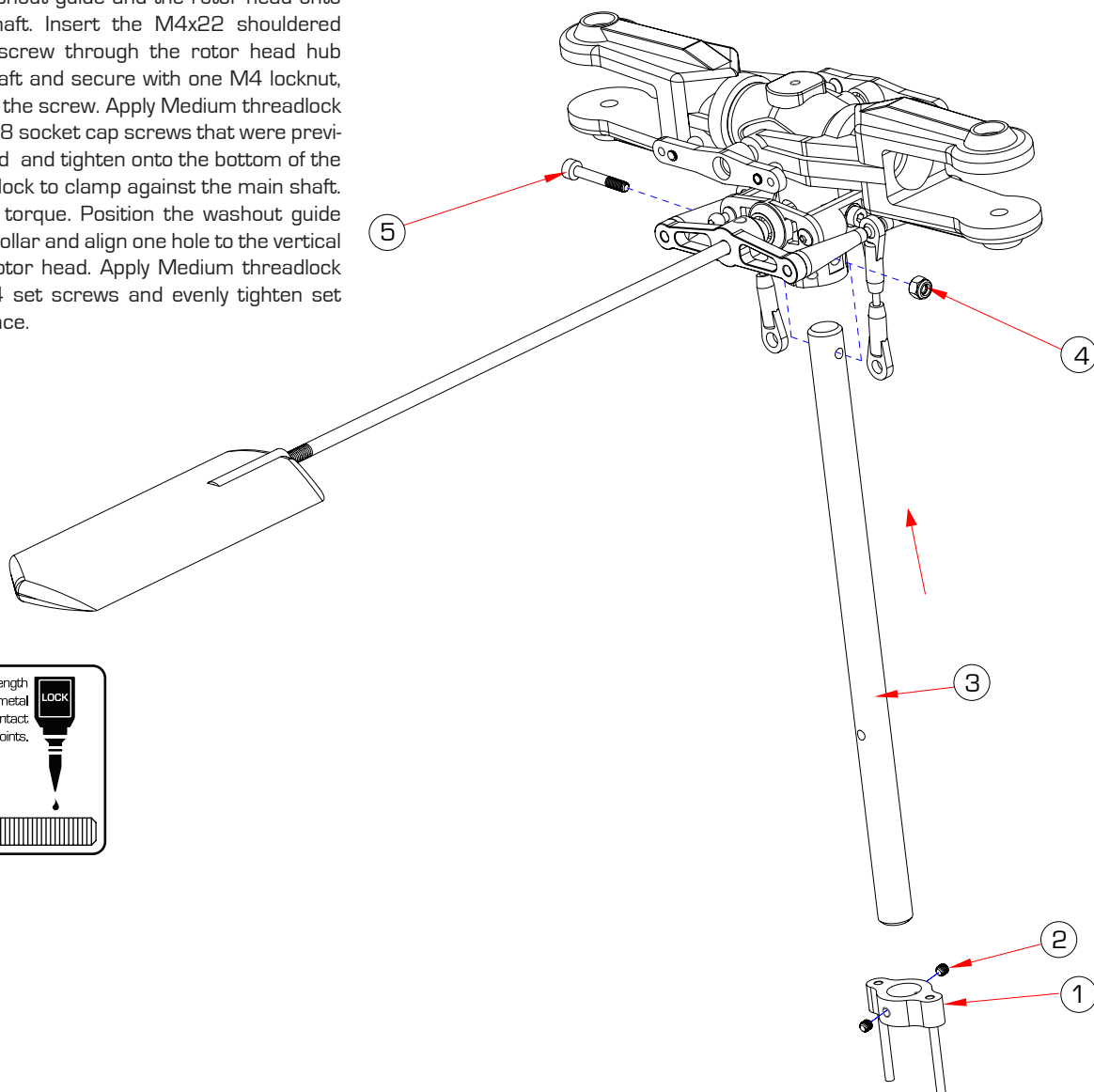
Slide the washout guide and the rotor head onto the main shaft. Insert the M4x22 shouldered socket cap screw through the rotor head hub and main shaft and secure with one M4 locknut, torque down the screw. Apply Medium threadlock to the M2.5x8 socket cap screws that were previously installed and tighten onto the bottom of the rotor head block to clamp against the main shaft. Do not over torque. Position the washout guide against the collar and align one hole to the vertical slot in the rotor head. Apply Medium threadlock to the M3x4 set screws and evenly tighten set screws in place.



| No. | Part # | Description | Gty |
|-----|-----------|--------------------------------------|-----|
| 1 | HI6153 | Aluminum Washout Guide(剪型臂导柱) | 1 |
| 2 | CNM3x4SS | M3x4 Socket Head Set Screw(无头内六角螺钉) | 2 |
| 3 | HW6053B | 10mm Main Shaft(主轴) | 1 |
| 4 | CNM4LOCK | M4 Lock-nut(M4 螺母) | 1 |
| 5 | CNM4x22CS | M4x22 Cap Screws(杯头内六角螺钉) | 1 |

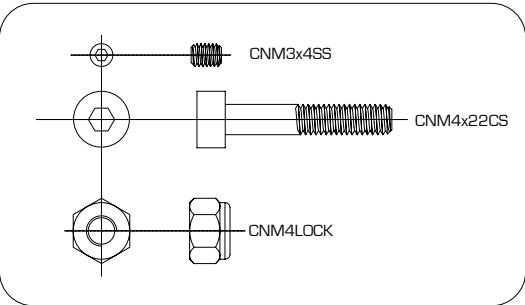
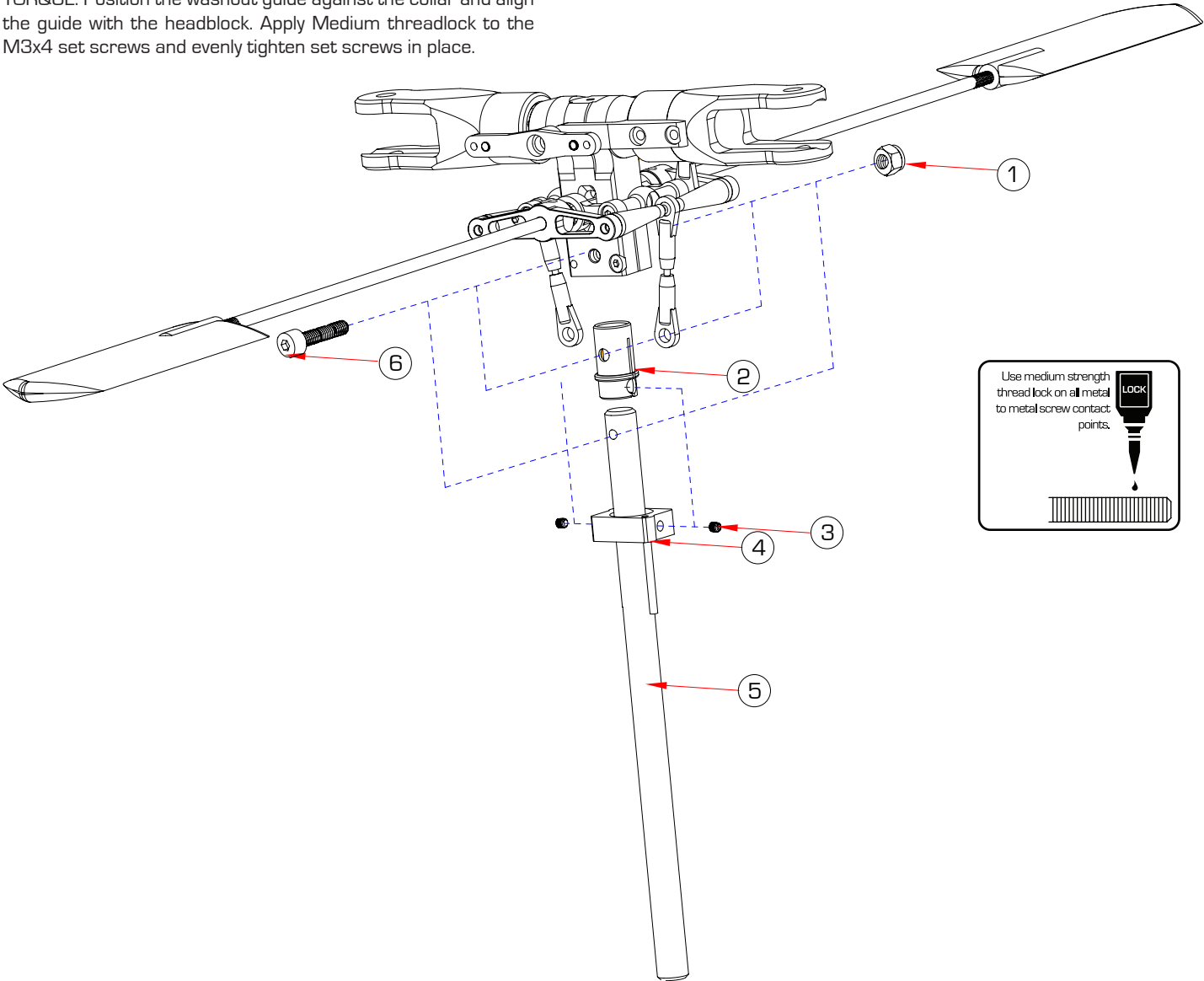
BAG 1

Slide the washout guide and the rotor head onto the main shaft. Insert the M4x22 shouldered socket cap screw through the rotor head hub and main shaft and secure with one M4 locknut, torque down the screw. Apply Medium threadlock to the M2.5x8 socket cap screws that were previously installed and tighten onto the bottom of the rotor head block to clamp against the main shaft. Do not over torque. Position the washout guide against the collar and align one hole to the vertical slot in the rotor head. Apply Medium threadlock to the M3x4 set screws and evenly tighten set screws in place.



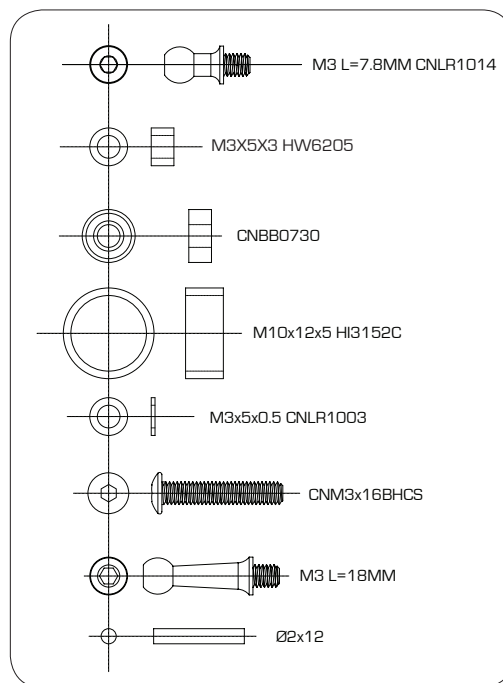
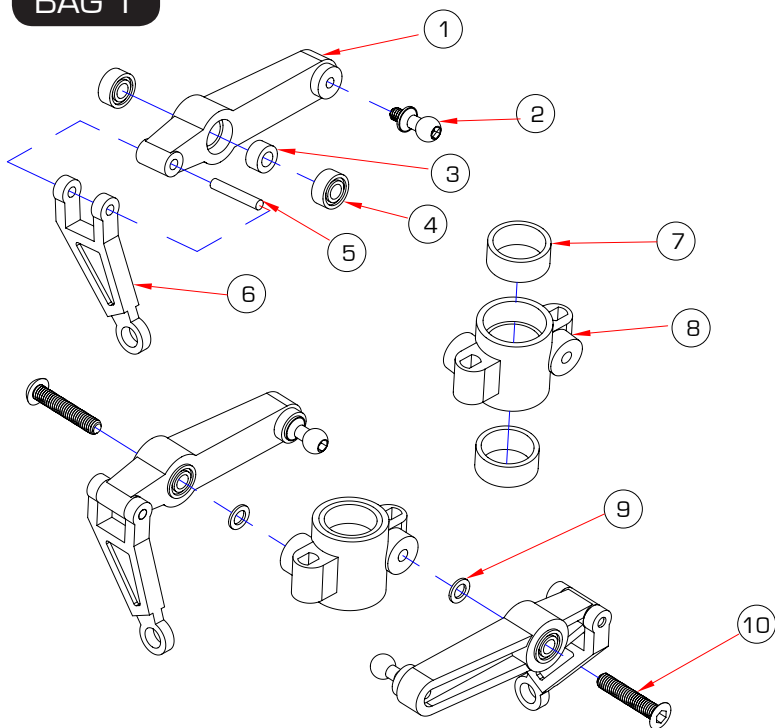
| No. | Part # | Description | Qty |
|-----|-----------|--------------------------------------|-----|
| 1 | HI6153 | Aluminum Washout Guide[剪型臂导柱] | 1 |
| 2 | CNM3x4SS | M3x4 Socket Head Set Screw[无头内六角螺钉] | 2 |
| 3 | HW6053B | 10mm Main Shaft[主轴] | 1 |
| 4 | CNM4LOCK | M4 Lock-nut[M4 螺母] | 1 |
| 5 | CNM4x22CS | M4x22 Cap Screws[杯头内六角螺钉] | 1 |

Insert the sleeve into the head block, then slide the washout guide and the rotor head onto the main shaft. Insert the M4x22 shouldered socket cap screw through the rotor head hub making sure the sleeve is aligned and secure with one M4 locknut. Apply Medium threadlock to the M3x8 socket cap screws that were previously installed and tighten onto the bottom of the rotor head block to clamp against the main shaft. DO NOT OVER TORQUE. Position the washout guide against the collar and align the guide with the headblock. Apply Medium threadlock to the M3x4 set screws and evenly tighten set screws in place.



| No. | Part # | Description | Qty |
|-----|-----------|--------------------------------------|-----|
| 1 | CNM4LOCK | M4 Lock-nut(M4 螺母) | 1 |
| 2 | CN2511B | Rotor Head Hub Sleeve (主轴铝套) | 1 |
| 3 | CNM3x4SS | M3x4 Socket Head Set Screw(无头内六角螺钉) | 2 |
| 4 | HI6153A | Aluminum Washout Guide(剪型臂导柱) | 1 |
| 5 | HW6053B | 10mm Main Shaft(主轴) | 1 |
| 6 | CNM4x22CS | M4x22 Cap Screws(杯头内六角螺钉) | 1 |

BAG 1

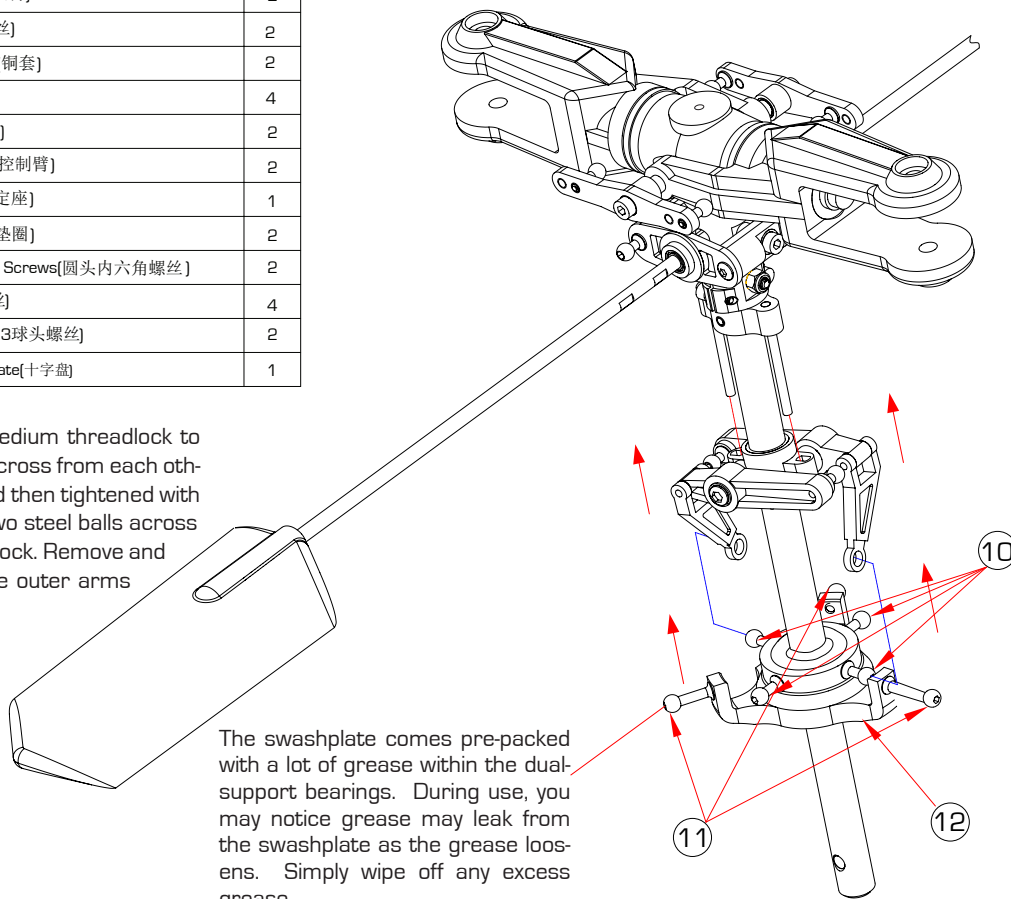


Comes pre-assembled

It is up to you to determine whether this assembly is correct. Please make sure to check it prior to installation.

| No. | Part # | Description | Qty |
|-----|-------------|--|-----|
| 1 | HI3152AC | Washout Set [10mm] (摆臂) | 2 |
| 2 | CNLR1014 | M3 Ball Link [M3球头螺丝] | 2 |
| 3 | HW6205 | 3x5x3 Bellcrank Spacer (铜套) | 2 |
| 4 | CNBB0730 | 3x7x3 Bearing (轴承) | 4 |
| 5 | HI3152A | Radius Link w/ Pin (插销) | 2 |
| 6 | HI3152A | Radius Link w/ Pin (三角控制臂) | 2 |
| 7 | HI3152C | Washout Set (控制臂固定座) | 1 |
| 8 | CNLR1003 | 3x5x0.5 Micro Washer (垫圈) | 2 |
| 9 | CNM3x16BHCS | M3x16 Button Head Cap Screws (圆头内六角螺丝) | 2 |
| 10 | CNLR1014 | M3 Ball Link [M3球头螺丝] | 4 |
| 11 | CNLR1021 | M3 Ball Link L=18MM [M3球头螺丝] | 2 |
| 12 | HW6146GA | Dual Ball Bearing Swashplate (十字盘) | 1 |

Starting with the inside race, apply Medium threadlock to the silver steel balls and attach them across from each other. The balls need to be started by hand then tightened with an M2.0 hex driver. Insert the other two steel balls across from each other using Medium threadlock. Remove and install the three long steel balls on the outer arms using Medium threadlock.

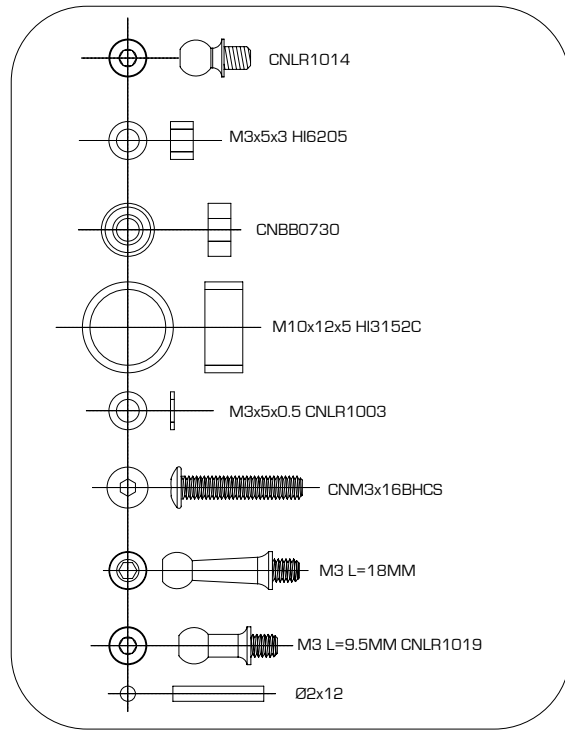


The swashplate comes pre-packed with a lot of grease within the dual-support bearings. During use, you may notice grease may leak from the swashplate as the grease loosens. Simply wipe off any excess grease.

BAG 1

It is up to you to determine whether this assembly is correct. Please make sure to check it prior to installation.

Comes pre-assembled

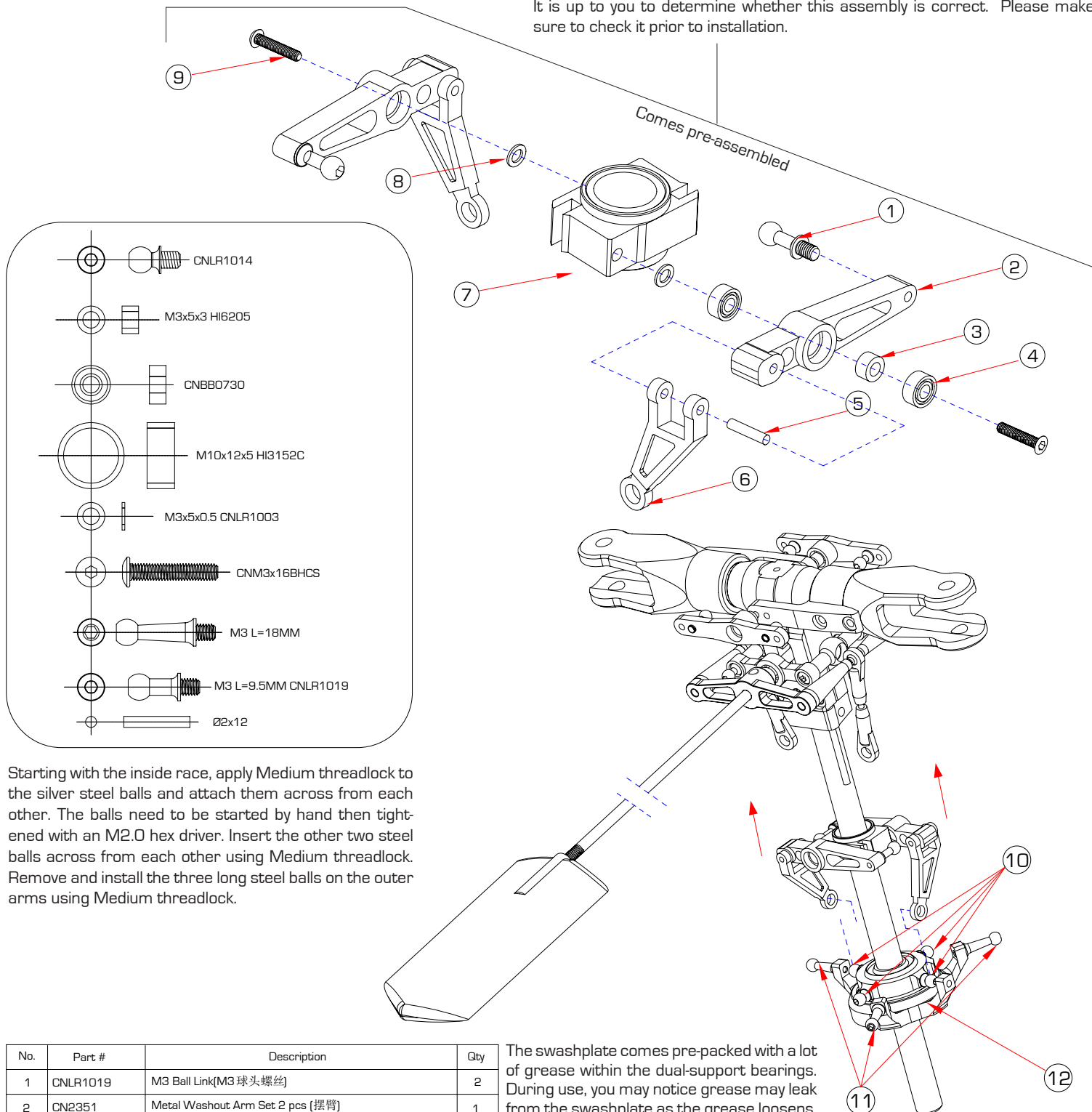


| No. | Part # | Description | Qty |
|-----|-------------|---------------------------------------|-----|
| 1 | CNLR1019 | M3 Ball Link[M3 球头螺丝] | 2 |
| 2 | CN2351 | Metal Washout Arm Set 2 pcs [摆臂] | 1 |
| 3 | HI6205 | 3x5x3 Bellcrank Spacer[铜套] | 2 |
| 4 | CNBB0730 | 3x7x3 Bearing[轴承] | 4 |
| 5 | HI3152A | Radius Link w/ Pin[插销] | 2 |
| 6 | HI3152A | Radius Link w/ Pin[三角控制臂] | 2 |
| 7 | HI3152C | Washout Set with arms [控制臂固定座] | 1 |
| 8 | CNLR1003 | 3x5x0.5 Micro Washer[垫圈] | 2 |
| 9 | CNM3x16BHCS | M3x16 Button Head Cap Screws[圆头内六角螺丝] | 2 |
| 10 | CNLR1014 | M3 Ball Link[M3 球头螺丝] | 5 |
| 11 | CNLR1021 | M3 Ball Link L=18MM[M3 球头螺丝] | 2 |
| 12 | HW6146GA | Dual Ball Bearing Swashplate[十字盘] | 1 |

Starting with the inside race, apply Medium threadlock to the silver steel balls and attach them across from each other. The balls need to be started by hand then tightened with an M2.0 hex driver. Insert the other two steel balls across from each other using Medium threadlock. Remove and install the three long steel balls on the outer arms using Medium threadlock.

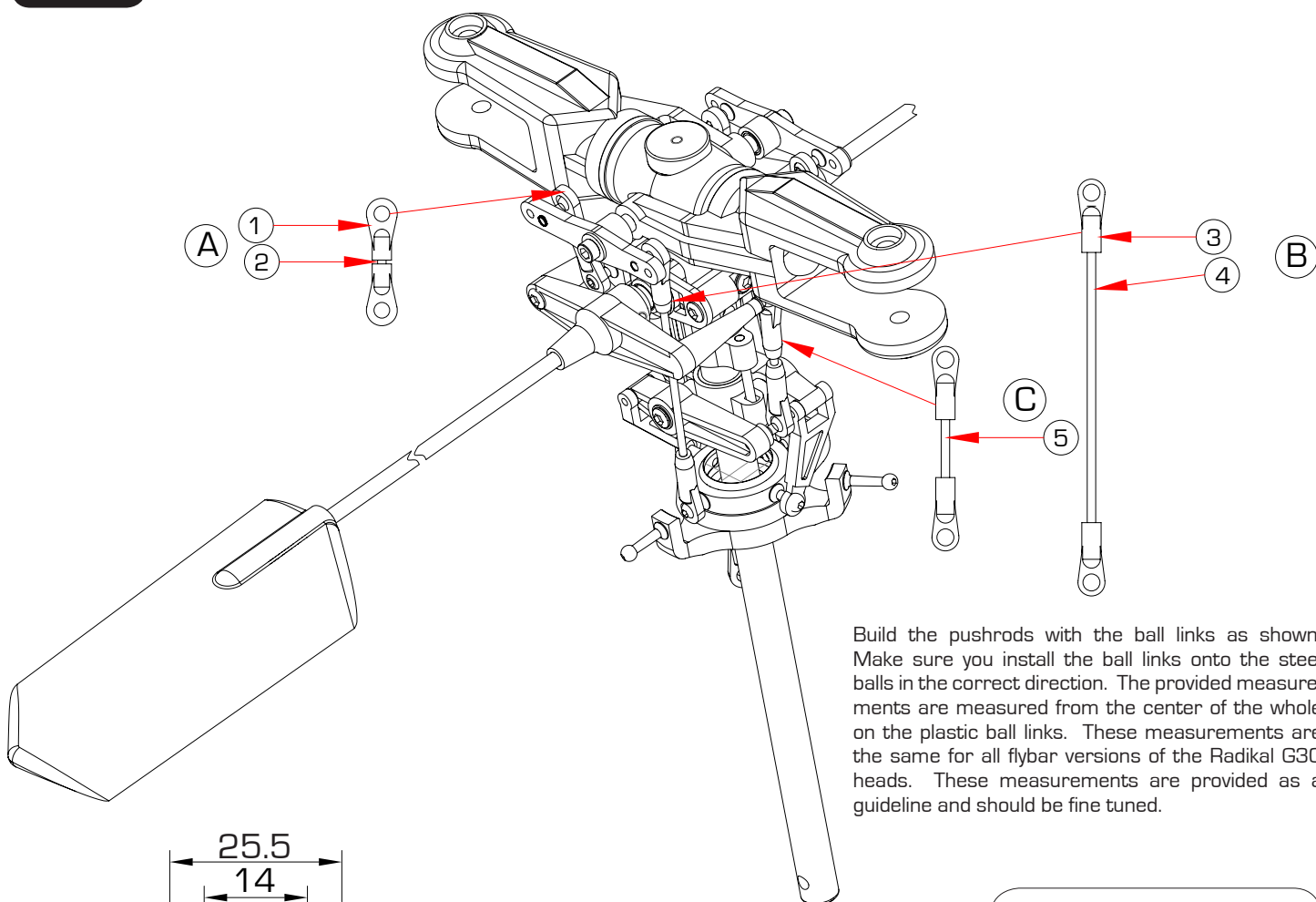
The swashplate comes pre-packed with a lot of grease within the dual-support bearings. During use, you may notice grease may leak from the swashplate as the grease loosens. Simply wipe off any excess grease.

It is up to you to determine whether this assembly is correct. Please make sure to check it prior to installation.

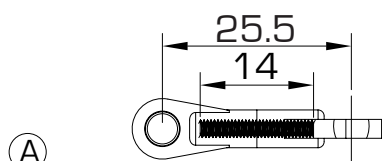


| No. | Part # | Description | Qty |
|-----|-------------|---|-----|
| 1 | CNLR1019 | M3 Ball Link[M3 球头螺丝] | 2 |
| 2 | CN2351 | Metal Washout Arm Set 2 pcs [摆臂] | 1 |
| 3 | HI6205 | 3x5x3 Bellcrank Spacer[铜套] | 2 |
| 4 | CNBB0730 | 3x7x3 Bearing[轴承] | 4 |
| 5 | HI3152A | Radius Link w/ Pin[插销] | 2 |
| 6 | HI3152A | Radius Link w/ Pin[三角控制臂] | 2 |
| 7 | CN2291B | Metal Washout Base for CN2511B [控制臂固定座] | 1 |
| 8 | CNLR1003 | 3x5x0.5 Micro Washer[垫圈] | 2 |
| 9 | CNM3x16BHCS | M3x16 Button Head Cap Screws[圆头内六角螺丝] | 2 |
| 10 | CNLR1014 | M3 Ball Link[M3 球头螺丝] | 5 |
| 11 | CNLR1021 | M3 Ball Link L=18MM[M3 球头螺丝] | 2 |
| 12 | HW6146GA | Dual Ball Bearing Swashplate [十字盘] | 1 |

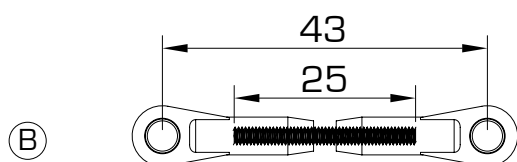
BAG 1



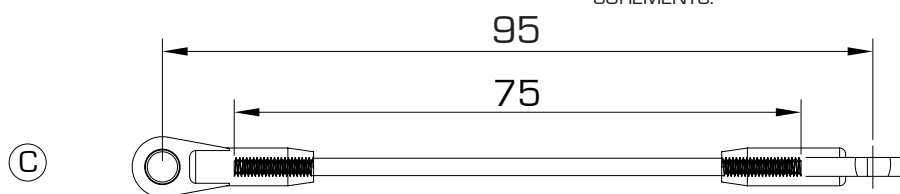
Build the pushrods with the ball links as shown. Make sure you install the ball links onto the steel balls in the correct direction. The provided measurements are measured from the center of the whole on the plastic ball links. These measurements are the same for all flybar versions of the Radikal G30 heads. These measurements are provided as a guideline and should be fine tuned.



A



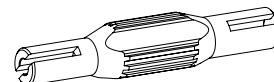
B



C

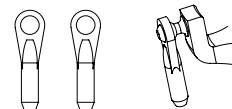
DRAWN TO A SCALE OF 1-TO-1. YOU CAN MATCH YOUR LINKS UP TO THIS PAGE FOR PROPER MEASUREMENTS.

HELPFUL TOOL:



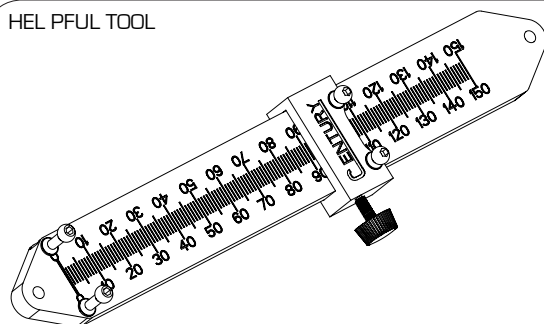
PART# CN2219A: BALL LINK EASY DRIVER

NOTICE SIZE OF HOLES ON BALL LINKS



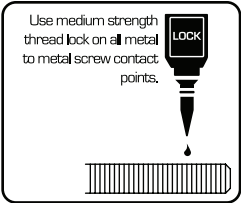
THE SIDE WITH THE SMALLER HOLE SHOULD FACE OUTWARDS

HELPFUL TOOL

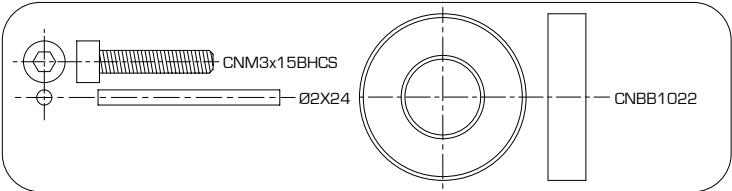
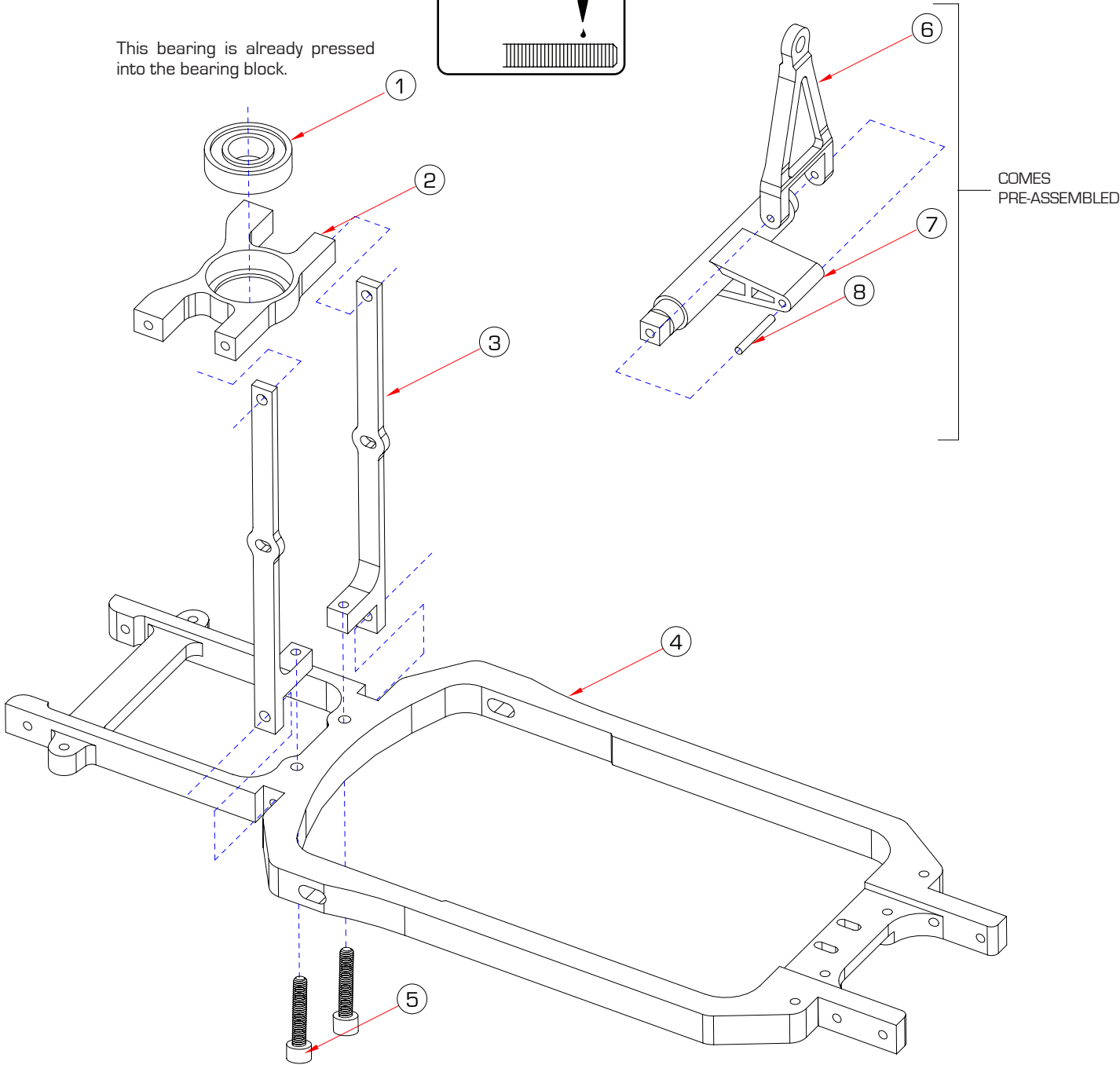


PART# CN2255: CONTROL ROD SETUP GAUGE

| No. | Part # | Description | Qty |
|-----|---------|---|-----|
| 1 | HI6145 | Ball Link Set (26 Long, 4 Short)(球头连接杆) | 4 |
| 2 | HW6192A | Pushrod Set(连杆) | 2 |
| 3 | HI6145 | Ball Link Set (26 Long, 4 Short)(球头连接杆) | 8 |
| 4 | HW6192A | Pushrod Set(连杆) | 2 |
| 5 | HW6192A | Pushrod Set(连杆) | 2 |



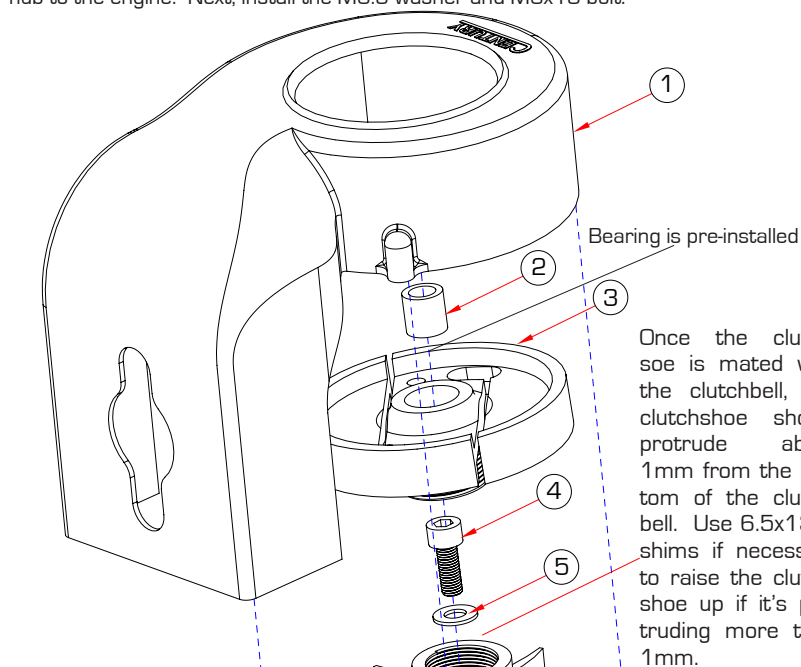
This bearing is already pressed into the bearing block.



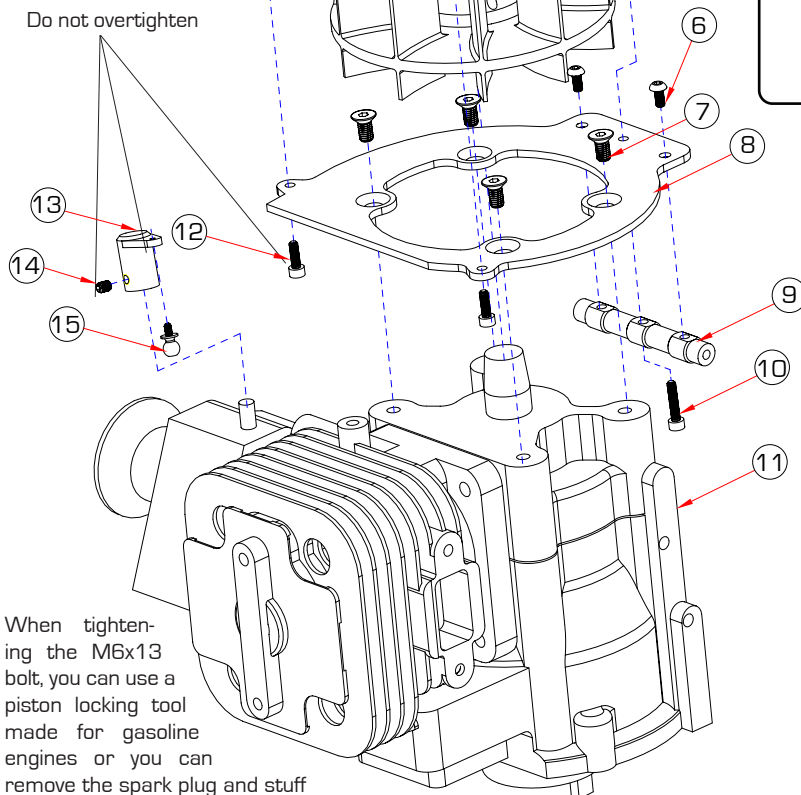
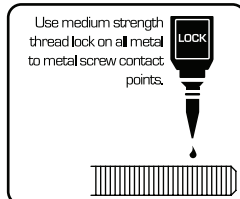
| No. | Part # | Description | Qty |
|-----|-----------|---------------------------------------|-----|
| 1 | CNBB1022 | Bearing(滚珠轴承)10x22x6 | 1 |
| 2 | HW6042GL3 | Lower Main Shaft Bearing Block (主轴承座) | 1 |
| 3 | HW6119A | Box Frame Support (L&R) (机身加强支架) | 2 |
| 4 | HW6117G30 | Landing Gear Frame(引擎座底板) | 1 |
| 5 | CNM3x15CS | Cap Screw(杯头内六角螺丝)M3x15 | 2 |
| 6 | HI6032G | A-Arm(A型控制臂) | 1 |
| 7 | HI6032G | A-Arm Block(A型控制臂座) | 1 |
| 8 | HI6032G | Pin (插销)Ø2x24 | 1 |

BAG 3

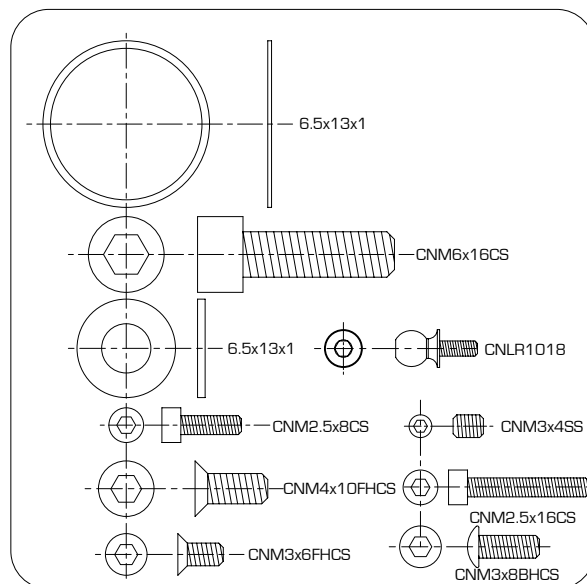
Attach the cooling shroud mounting plate first, making sure it is installed in the correct position. The drilled beveled holes must match with the bevel head screws. Clean the crank shaft on the engine with alcohol, then apply a very small coating of oil to the crank shaft prior to installing fan/clutch hub. Once you have the fan assembly installed onto the motor, tighten the M2.5x8 screw on the bottom of the hub. Be gentle as not to over-torque this screw. This screw is used to center the hub and is not the anchoring screw that holds the hub to the engine. Next, install the M6.5 washer and M6x13 bolt.



Once the clutch-shoe is mated with the clutchbell, the clutchshoe should protrude about 1mm from the bottom of the clutchbell. Use 6.5x13x1 shims if necessary to raise the clutch-shoe up if it's protruding more than 1mm.



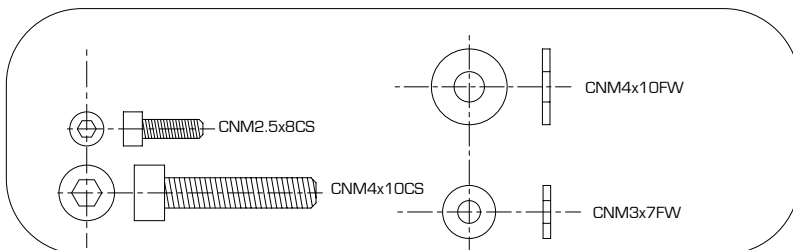
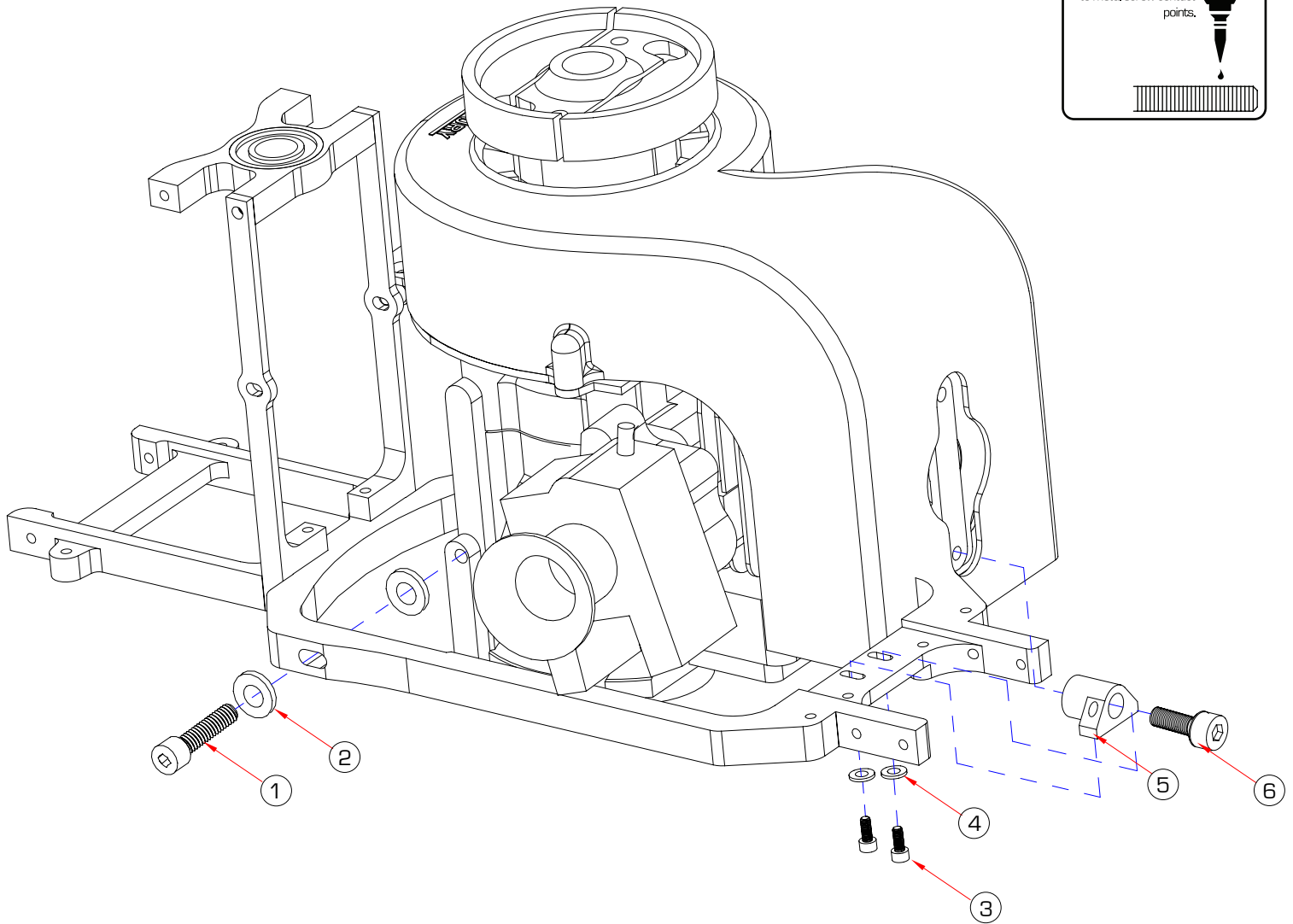
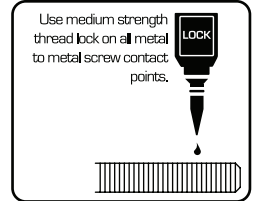
When tightening the M6x13 bolt, you can use a piston locking tool made for gasoline engines or you can remove the spark plug and stuff nylon rope into the piston hole. This will allow you to torque the bolt without the engine spinning. **NEVER** grab the bottom of the crank shaft where the starter attaches and tighten the bolt holding fan/clutch hub.



Build the fan by placing Medium threadlock into the threaded holes on the fan hub [#16]. Attach the fan to the hub as shown and install the M3x6 flush head cap screws making sure the screws fall into the beveled hole on the fan.

| No. | Part # | Description | Gty |
|-----|-------------|---------------------------------------|-----|
| 1 | HI6020B | Plastic Cooling Shroud[风扇罩] | 1 |
| 2 | CNBB1014A | Clutch One way Bearing [10mm] [单向轴承] | 1 |
| 3 | HW6011G3 | Clutch Shoe 59mm [离合器] | 1 |
| 4 | CNM6x16CS | Cap Screw[杯头内六角螺丝]M6x16 | 1 |
| 5 | CNM6.5x13FW | Washer[垫片]6.5x13x1 | 1 |
| 6 | CNM3x8BHCS | Button Head Cap Screw[圆头内六角螺丝]M3x8 | 2 |
| 7 | CNM5x10FHCS | Flush Head Cap Screws[斜头内六角螺丝]M4x10 | 4 |
| 8 | HW6118H3 | Cooling Shroud Mount Plate[挡风板] | 1 |
| 9 | HW6116 | Cooling Shroud Plate Support Bar [铝柱] | 1 |
| 10 | CNM2.5x16CS | Cap Screw[杯头内六角螺丝]M2.5x16 | 1 |
| 11 | Z231 | Engine[引擎] | 1 |
| 12 | CNM2.5x8CS | Cap Screw[杯头内六角螺丝]M2.5x8 | 2 |
| 13 | HW6192B | Carburetor Arm[化油器控制臂] | 1 |
| 14 | CNM3x4SS | Set Screw[无头内六角螺丝]M3x4 | 1 |
| 15 | CNLR1018 | Ultra Short Steel Ball[球头螺丝] | 1 |
| 16 | HI6012 | Cooling Fan Hub [风扇座] | 1 |
| 17 | CNM2.5x8CS | Cap Screw[杯头内六角螺丝]M2.5x8 | 1 |
| 18 | HI6011 | Two Way Cooling Fan[风扇] | 1 |
| 19 | CNM3x6FHCS | Flush Head Cap Screws[斜头内六角螺丝]M3x6 | 5 |

BAG 2



| No. | Part # | Description | Qty |
|-----|------------|-------------------------------------|-----|
| 1 | CNM4x20CS | Cap Screw[杯头内六角螺丝]M4x20 | 2 |
| 2 | CNM4x10FW | Washer[垫片]4x10x1 | 4 |
| 3 | CNM2.5x8CS | Cap Screw[杯头内六角螺丝]M2.5x8 | 2 |
| 4 | CNM3x7FW | Washer[垫片]3x7x1 | 2 |
| 5 | HW6117G3A | Front Engine Mounting Block [引擎固定块] | 1 |
| 6 | CNM4x20CS | Cap Screw[杯头内六角螺丝]M4x20 | 1 |

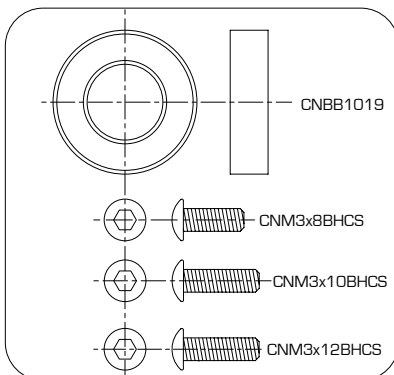
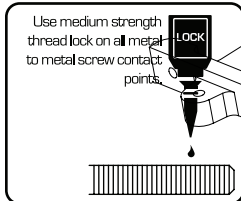
When installing the engine assembly to the frames, do not tighten one side all the way leaving the other side completely loose. Tighten the M4x20 bolts on either side of the frames evenly moving from one side to the other. Make sure to apply medium threadlock to these bolts prior to installation. After you have installed the left and right M4x20 bolts, install the front engine block making sure to use medium threadlock on the M4x20 bolt holding the engine's head in place. Dry fit the M3x8 button head screws holding the clutch assembly. Leave these loose until the next step.

BAG 2

Flanged bearing is already pressed into frames. Make sure the flange is facing inwards.

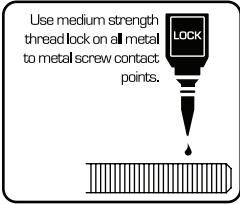
This bearing is already pressed into the bearing block.

Attach the left sideframe as shown and apply medium threadlock to all the screws. Check screw #6. If it does not seem threadlocked, remove it and apply medium threadlock.

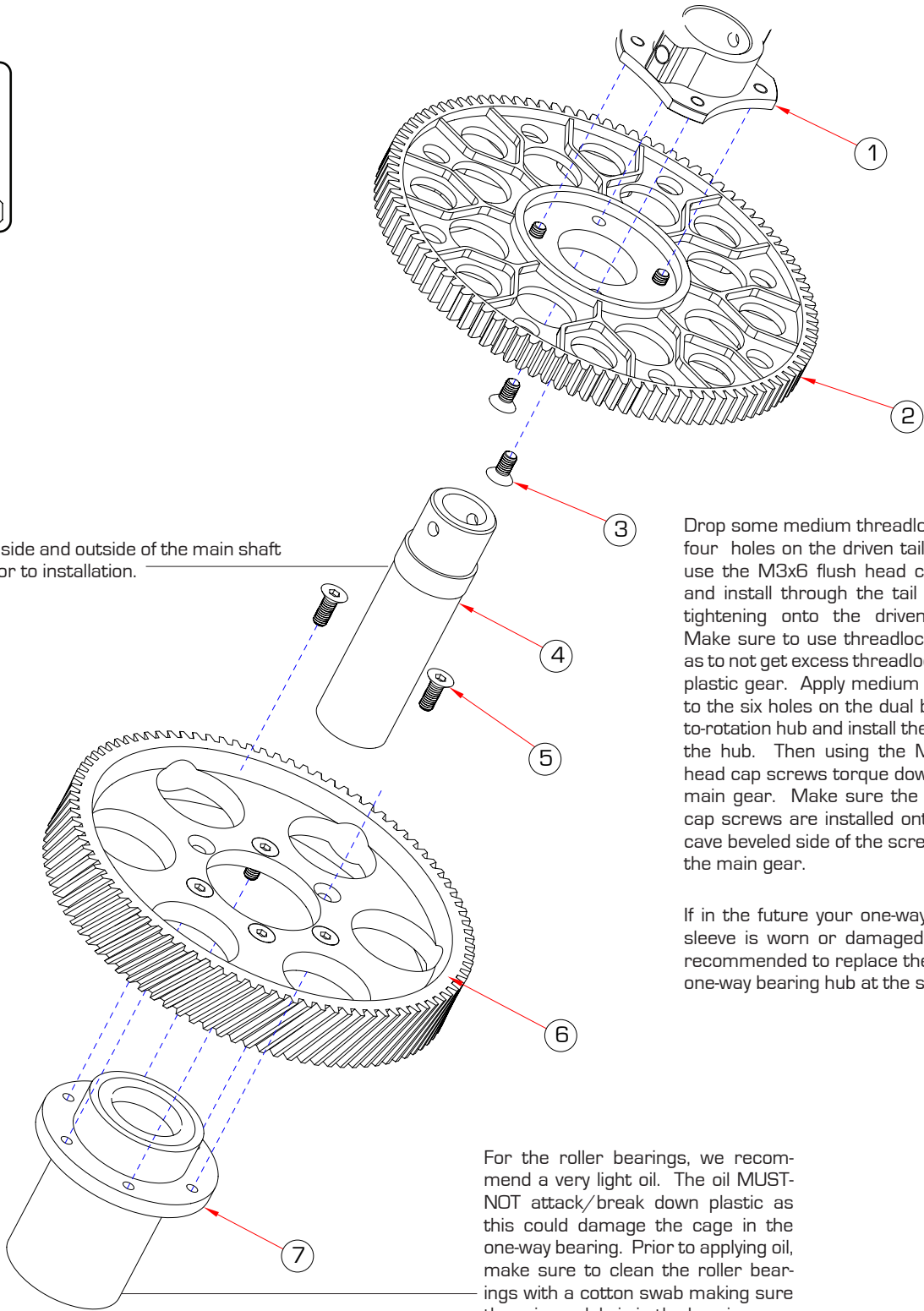


| No. | Part # | Description | Qty |
|-----|-------------|-------------------------------------|-----|
| 1 | CNBB1019 | Bearing(滚珠轴承)10x19x5 | 2 |
| 2 | HW6042GU | Upper Bearing Block(主轴承座) | 1 |
| 3 | HI6116L3 | Main Frames Left Rear G-10 (左右侧板) | 1 |
| 4 | HI6116LC3 | Main Frames Left Rear Carbon (左右侧板) | 1 |
| 5 | CNM3x8BHCS | Button Head Cap Screw(圆头内六角螺丝)M3x8 | 3 |
| 6 | CNM3x6BHCS | Button Head Cap Screw(圆头内六角螺丝)M3x6 | 1 |
| 7 | CNM3x10BHCS | Button Head Cap Screw(圆头内六角螺丝)M3x10 | 2 |
| 8 | HW6114G3 | Reinforcement Plate Left (补强板) | 1 |
| 9 | CNM3x12BHCS | Button Head Cap Screw(圆头内六角螺丝)M3x12 | 1 |

BAG 3



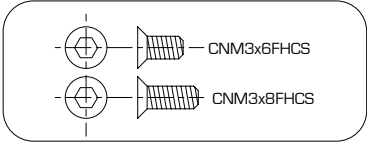
Be sure to clean the inside and outside of the main shaft sleeve with alcohol prior to installation.



Drop some medium threadlock into the four holes on the driven tail hub. Then use the M3x6 flush head cap screws and install through the tail drive gear tightening onto the driven tail hub. Make sure to use threadlock sparingly as to not get excess threadlock onto the plastic gear. Apply medium threadlock to the six holes on the dual bearing auto-rotation hub and install the gear onto the hub. Then using the M3x8 flush head cap screws torque down onto the main gear. Make sure the flush head cap screws are installed onto the concave beveled side of the screw holes on the main gear.

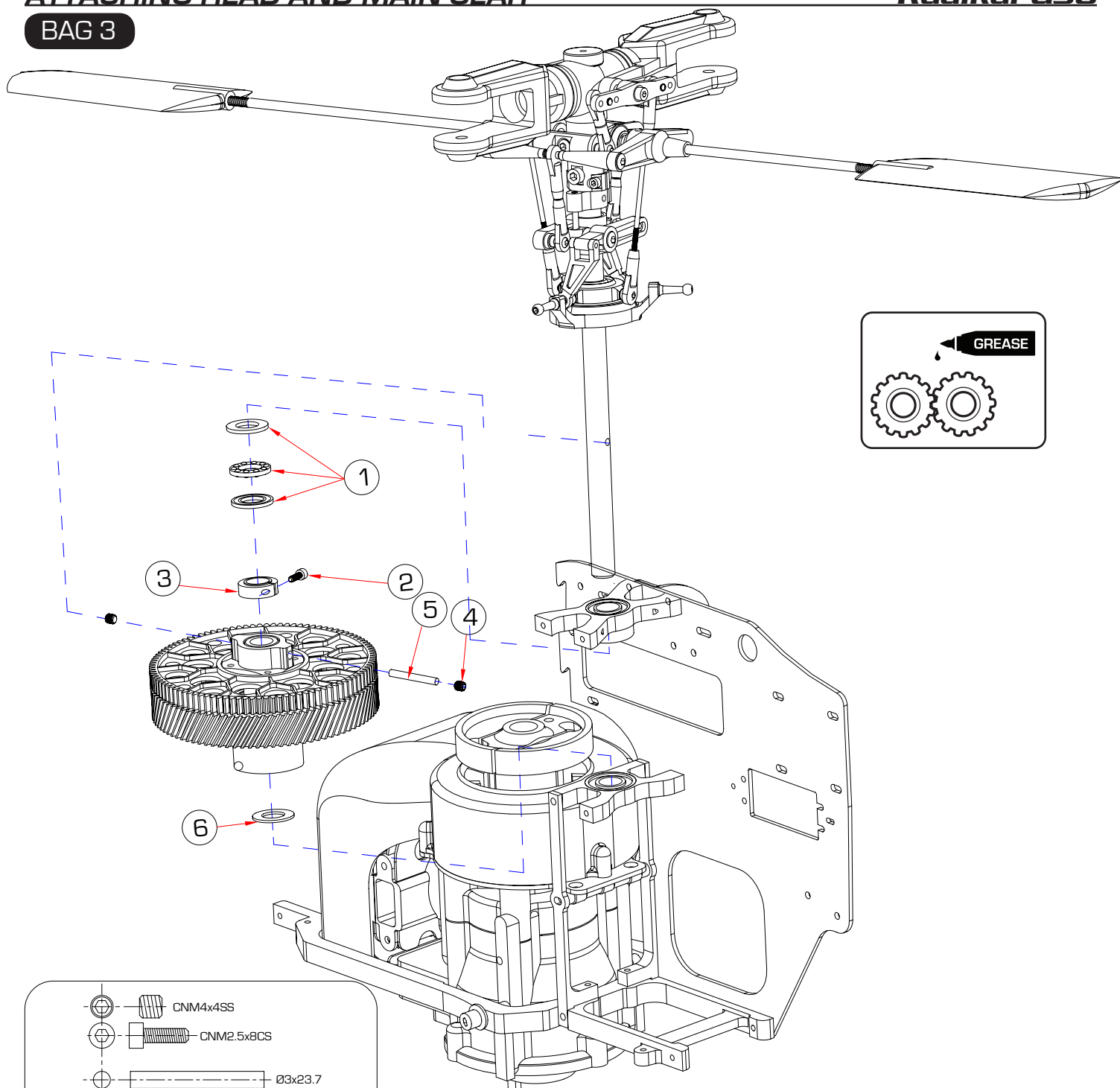
If in the future your one-way bearing or sleeve is worn or damaged, it is highly recommended to replace the sleeve and one-way bearing hub at the same time.

For the roller bearings, we recommend a very light oil. The oil MUST NOT attack/break down plastic as this could damage the cage in the one-way bearing. Prior to applying oil, make sure to clean the roller bearings with a cotton swab making sure there is no debris in the bearings.



| No. | Part # | Description | Qty |
|-----|------------|--------------------------------------|-----|
| 1 | HW6057A | Driven Tail Hub[传动主齿轮座] | 1 |
| 2 | HI6057 | Main Gear[传动主齿轮] | 1 |
| 3 | CNM3x6FHCS | Flush Head Cap Screws[斜头内六角螺钉M3x6] | 4 |
| 4 | HW6057C3 | Main Shaft Auto Sleeve [主齿轮铁套] | 1 |
| 5 | CNM3x8FHCS | Flush Head Cap Screws[斜头内六角螺钉M3x8] | 6 |
| 6 | HI6057C | 90T Main Gear[斜齿轮] | 1 |
| 7 | HW6057D3 | Dual Bearing Auto Hub [单向轴承座] | 1 |

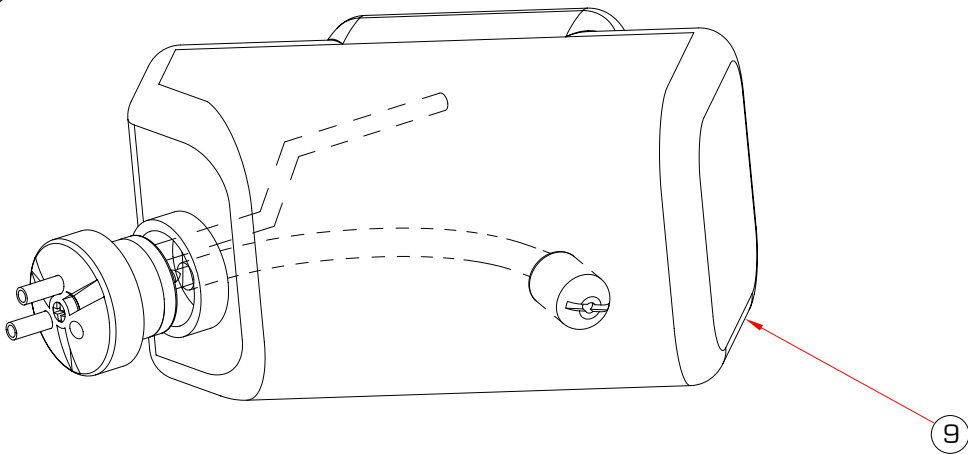
BAG 3



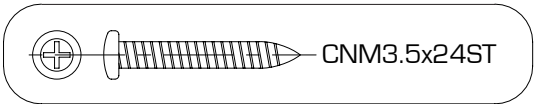
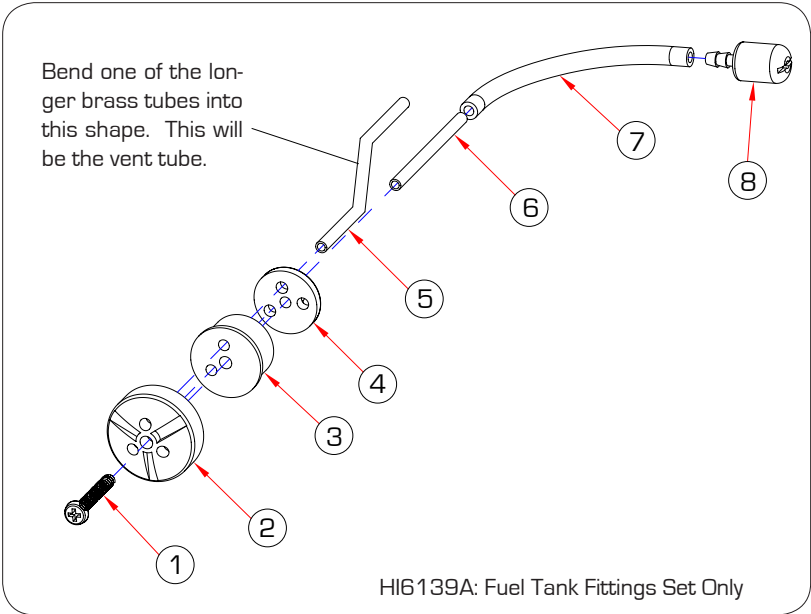
Apply grease to the thrust bearing. Place the Main Gear assembly into the frames. Insert the main shaft with head assembly through the bearing blocks while lining up the thrust bearing, and mast stopper while going through the Main Gear assembly. Line up the hole in the Main Shaft with the hole on the Driven Tail Hub. With the help of needle nose pliers or hemostats, place the Pin (#5) through while making sure you have it going through the Main Shaft. Install the two M4x4 set screws making sure you have them evenly threaded on both sides. When installing the Mast Stopper (#3), make sure it is pushed up to the top prior to tightening the M2.5x8 Cap Screw. **DO NOT OVER TIGHTEN.**

| No. | Material No. | Description | Gty |
|-----|--------------|-------------------------------|-----|
| 1 | CNBB1018T | Thrust Bearing[止推轴承]10x18x5.5 | 1 |
| 2 | CNM2.5x8CS | Cap Screw[杯头内六角螺]M2.5x8 | 1 |
| 3 | HW6054 | Mast Stopper[主轴限位块] | 1 |
| 4 | CNM4x4SS | Set Screw[无头内六角螺]M4x4 | 2 |
| 5 | HW6057AS | Pin[插销]Ø3x23.7 | 1 |
| 6 | HW6057DS | Copper Washer[铜垫片]10x18x1 | 1 |

BAG 2



Pay close attention when assembling the fuel tank. The vent tube must be bent and facing upwards when installed into the rubber stopper. There are 3 holes on the rubber stopper but notice only 2 are through holes. Cut the fuel line and attach the clunk to the line. Then attach the fuel line to the short brass tube. When cutting the fuel line, make sure you have enough slack in the fuel line so the clunk can reach all corners of the fuel tank. After installing the shorter brass tube with the fuel line, install the vent tube. Make sure the vent tube is positioned to point upwards in the fuel tank. Once you have everything positioned, slowly turn the M3.5x24 Phillips screw so that you barely grab the end of the small cap (#4). Once you insert the fuel tubing assembly into the tank, it will be very difficult to get this small cap out if you happen to drop it within the fuel tank. Making sure you still have the small cap (#4) attached to the fuel tubing assembly, push the fuel tubing assembly into the tank and start tightening the Phillips screw. This will pull the small cap (#4) closer to the large cap (#2) and expand the rubber stopper. Once tightened, gently tug on the assembly to make sure it is properly installed. It should not come out of the fuel tank.



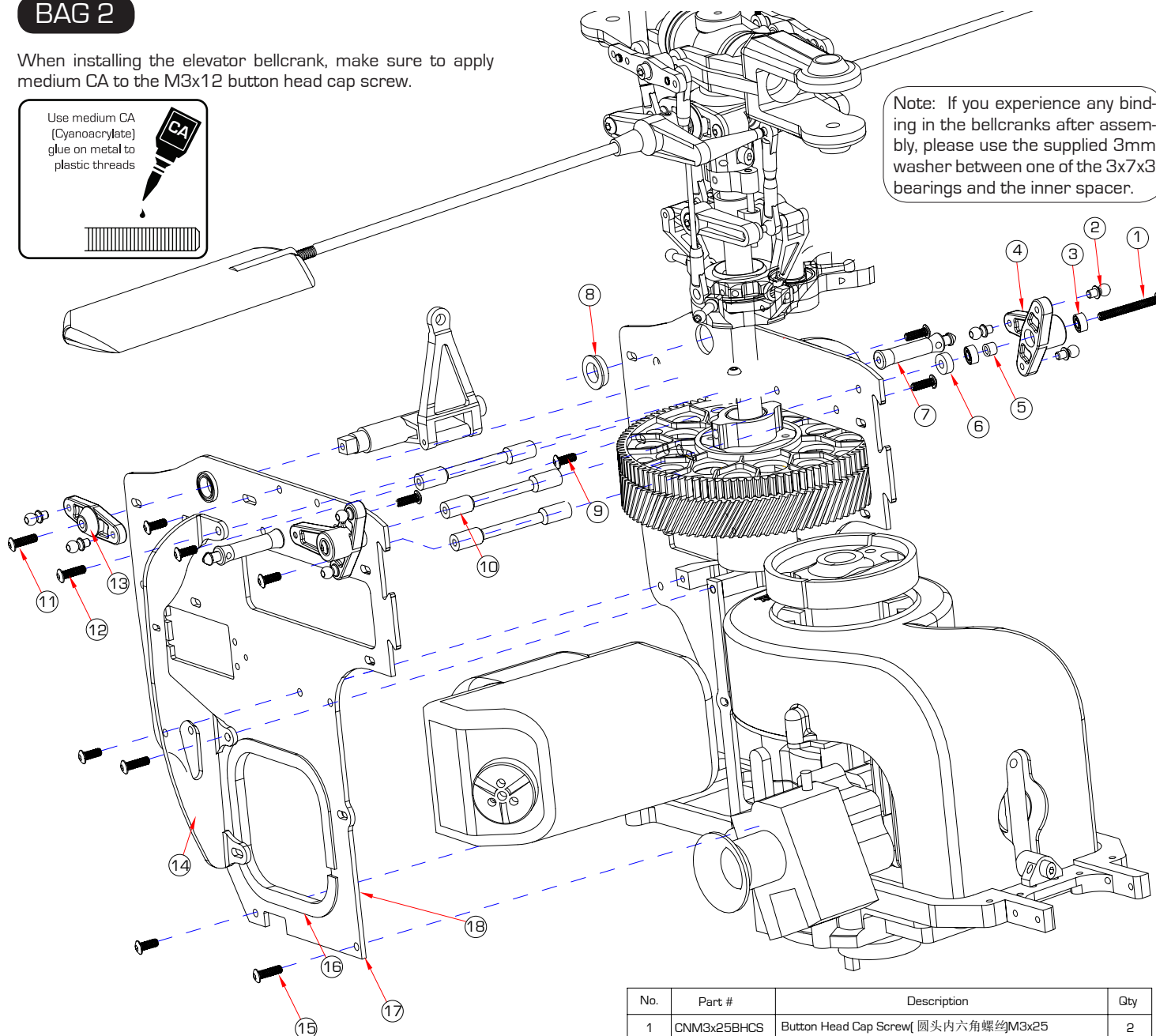
| No. | Part # | Description | Qty |
|-----|--------|-----------------------------|-----|
| 1 | HI6139 | Tapping Screw[十字紧固螺丝M3.5x24 | 1 |
| 2 | HI6139 | Outer Cap[油箱盖] | 1 |
| 3 | HI6139 | Rubber Stopper[油箱塞] | 1 |
| 4 | HI6139 | Rear Cap[油箱塞固定座] | 1 |
| 5 | HI6139 | Vent Tube-straight[长直铜油管] | 1 |
| 6 | HI6139 | Pickup Tube-straight[短直铜油管] | 1 |
| 7 | HI6139 | Fuel Hose[塑胶油管] | 1 |
| 8 | HI6139 | Fuel Tank Set[吸油嘴] | 1 |
| 9 | HI6139 | Fuel Tank[油箱] | 1 |

BAG 2

When installing the elevator bellcrank, make sure to apply medium CA to the M3x12 button head cap screw.

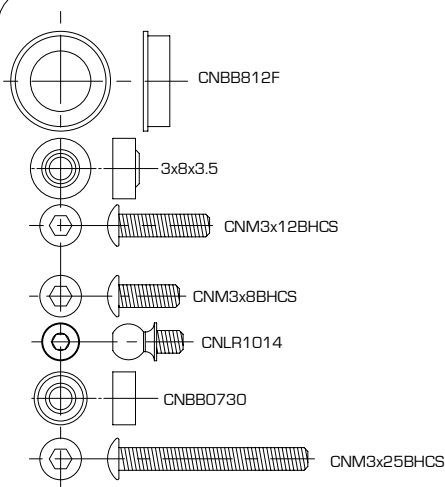
Use medium CA
(Cyanoacrylate)
glue on metal to
plastic threads

Note: If you experience any binding in the bellcranks after assembly, please use the supplied 3mm washer between one of the 3x7x3 bearings and the inner spacer.

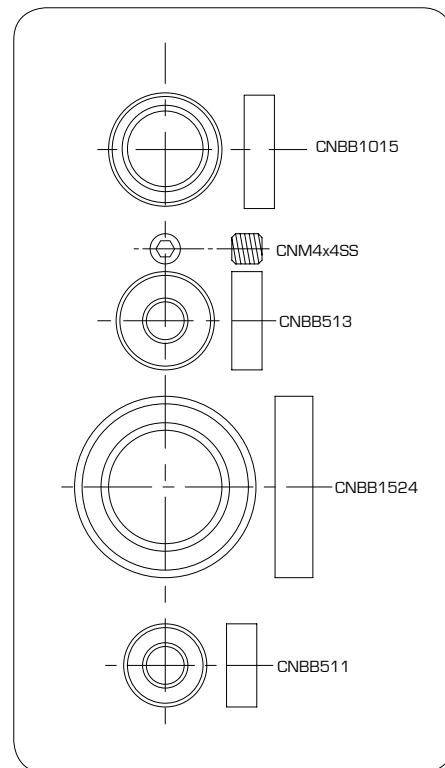
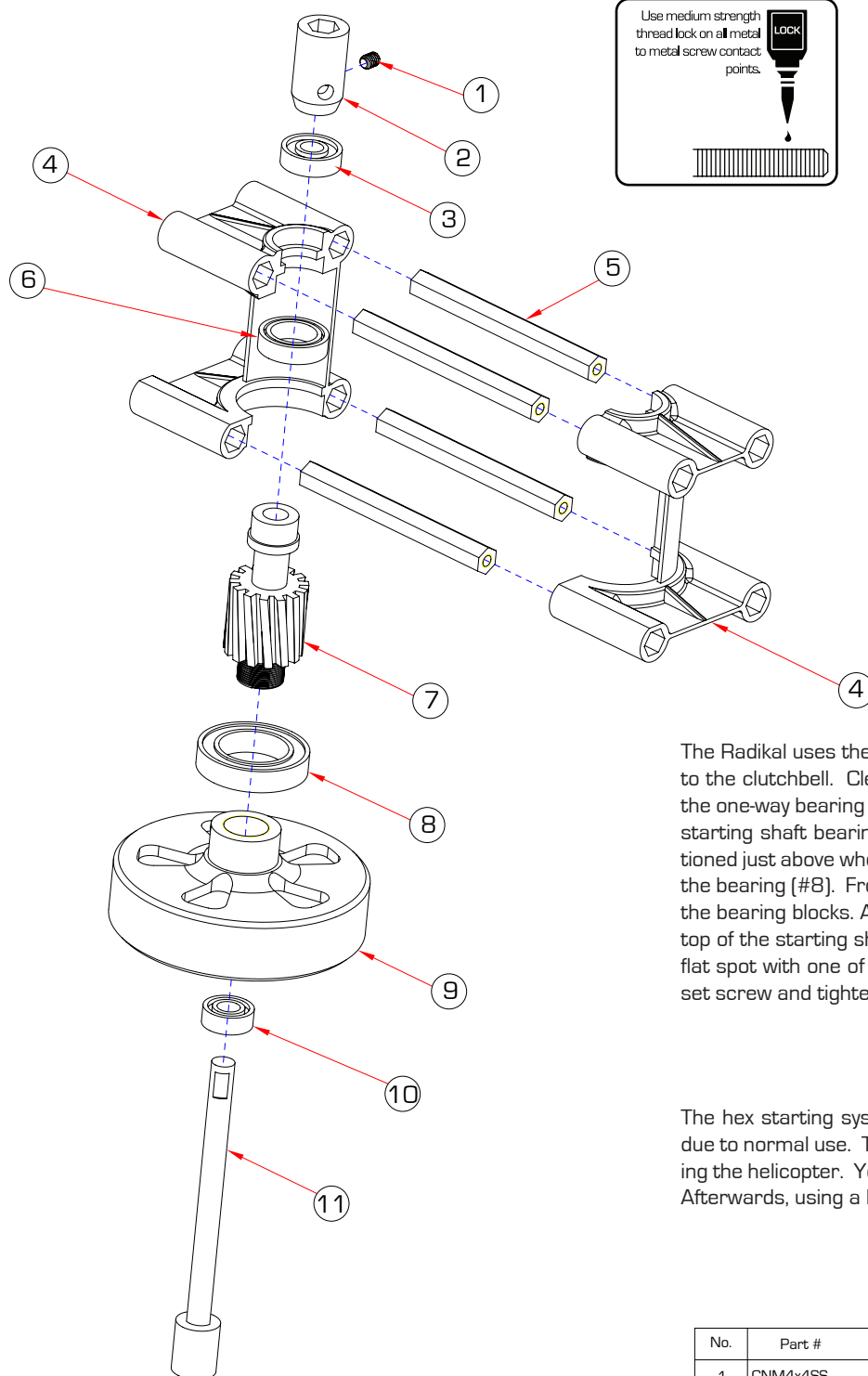


Assemble the aileron bellcranks by first pressing in the 3x7x3 bearing followed by the 3x5x7.5 spacer. Install the remaining bearing along with the metal balls. It is easier to thread the M3 linkage balls into the plastic bellcranks if you use an available M3 screw to make threads. Apply medium CA to the linkage balls. Once you have the aileron bell cranks built, install the right rear frame and apply medium threadlock to the M3x8 button head screws and tighten onto the skeletal support frame. Apply medium threadlock to the M3x25 button head cap screws and install the aileron bell cranks onto the aluminum post.

| No. | Part # | Description | Gty |
|-----|-------------|---|-----|
| 1 | CNM3x25BHCS | Button Head Cap Screw[圆头内六角螺 丝]M3x25 | 2 |
| 2 | CNLR1014 | M3 Linkage Ball[球头螺 丝] | 8 |
| 3 | CNBB0730 | Bearing[滚珠轴承]3x7x3 | 4 |
| 4 | HI6031G | Bell Crank[左右控制臂] | 2 |
| 5 | HI6031G | Bellcrank Spacer[垫片]3x5x7 | 2 |
| 6 | HI6031G | Bellcrank Spacer[垫片]3x8x3.5 | 2 |
| 7 | HW6125B | Canopy Standoff[机头罩支 架] | 2 |
| 8 | CNBB812F | Elevator Lever Flange Bearing[带边滚珠轴 承] | 2 |
| 9 | CNM3x8BHCS | Button Head Cap Screw[圆头内六角螺 丝]M3x8 | 9 |
| 10 | HI6031S3 | Aluminum Post[铝柱] | 3 |
| 11 | CNM3x12BHCS | Button Head Cap Screw[圆头内六角螺 丝]M3x12 | 1 |
| 12 | CNM3x10BHCS | Button Head Cap Screw[圆头内六角螺 丝]M3x10 | 2 |
| 13 | HI6032GB | Control Arm[控制臂] | 1 |
| 14 | HW6114G3 | Reinforcement Plate Right [右补强板] | 1 |
| 15 | CNM3x12BHCS | Button Head Cap Screw[圆头内六角螺 丝]M3x12 | 1 |
| 16 | HI6139B | Fuel Tank Isolator [油箱橡胶垫] | 1 |
| 17 | HI6116R3 | Main Frames Right Rear G-10 [左右后侧 板] | 1 |
| 18 | HI6116RC3 | Main Frames Right Rear Carbon [左右后侧 板] | 1 |



BAG 2



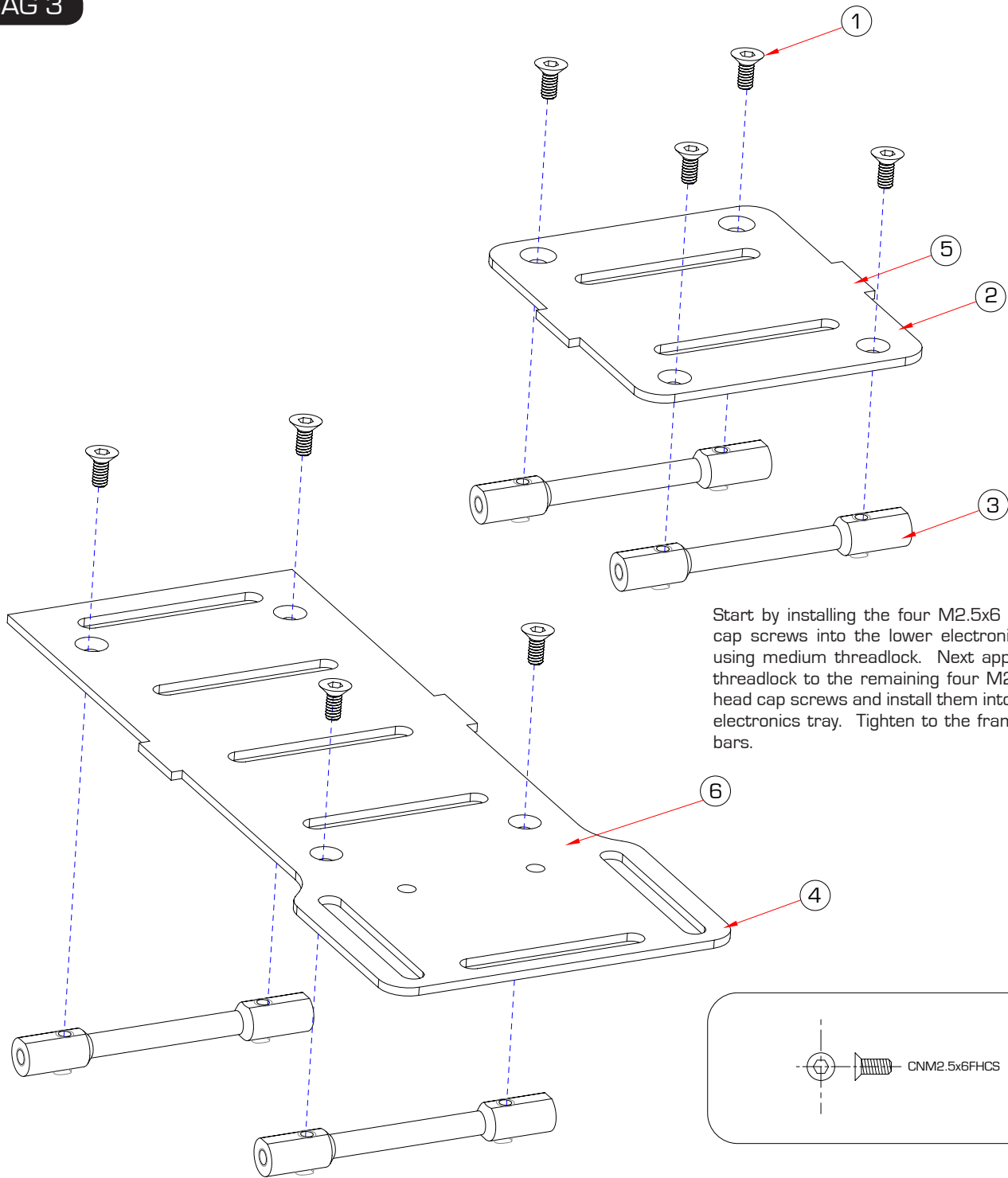
The Radikal uses the starting shaft and hex coupler to align the clutch to the clutchbell. Clean both the starting shaft and the inside race of the one-way bearing inside the clutchbell and the inside race of the top starting shaft bearing. Apply a small amount of Red threadlock positioned just above where the top of the clutchbell will be recessed within the bearing (#8). From the bottom, slide the starting shaft up through the bearing blocks. Apply a small amount of medium threadlock to the top of the starting shaft and slide the hex coupler in place aligning the flat spot with one of the holes. Apply medium threadlock to the M4x4 set screw and tighten in place.

The hex starting system is a regular replacement part and will wear due to normal use. The pull start option is a better alternative to starting the helicopter. You can use a pull start for the first start of the day. Afterwards, using a heavy duty electric starter is possible.

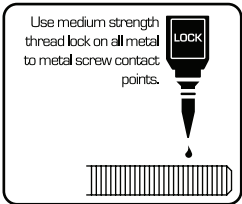
Clean the top of the pinion gear and the inside surfaces of both the upper and lower bearings inside the clutch shaft bearing block using alcohol. Apply a small amount of Red threadlock to the top edge of the clutch gear where it will contact the bearing (#6). Press the bearing block in place, firmly seating the bearing against the top of the pinion gear.

| No. | Part # | Description | Qty |
|-----|----------|----------------------------------|-----|
| 1 | CNM4x4SS | Set Screw[无头内六角螺钉M4x4] | 2 |
| 2 | HW6002 | Hexagon Head Start[六角启动头] | 1 |
| 3 | CNBB513 | Bearing[滚珠轴承]5x13x4 | 1 |
| 4 | HW6007G | Bearing Block[轴承座] | 2 |
| 5 | HW6007GS | Long Hex Spacers[六角铝柱]L=52MM | 4 |
| 6 | CNBB1015 | Bearing[滚珠轴承]10x15x4 | 1 |
| 7 | HW6043A | Alloy Drive Gear 14T[合金传动齿轮] | 1 |
| 8 | CNBB1524 | Bearing[滚珠轴承]15x24x5 | 1 |
| 9 | HW6013G3 | Clutch Bell Assembly 67mm [离合器罩] | 1 |
| 10 | CNBB511 | Bearing[滚珠轴承]5x11x4 | 1 |
| 11 | HW6006G3 | Starting Shaft[启动轴] | 1 |

BAG 3

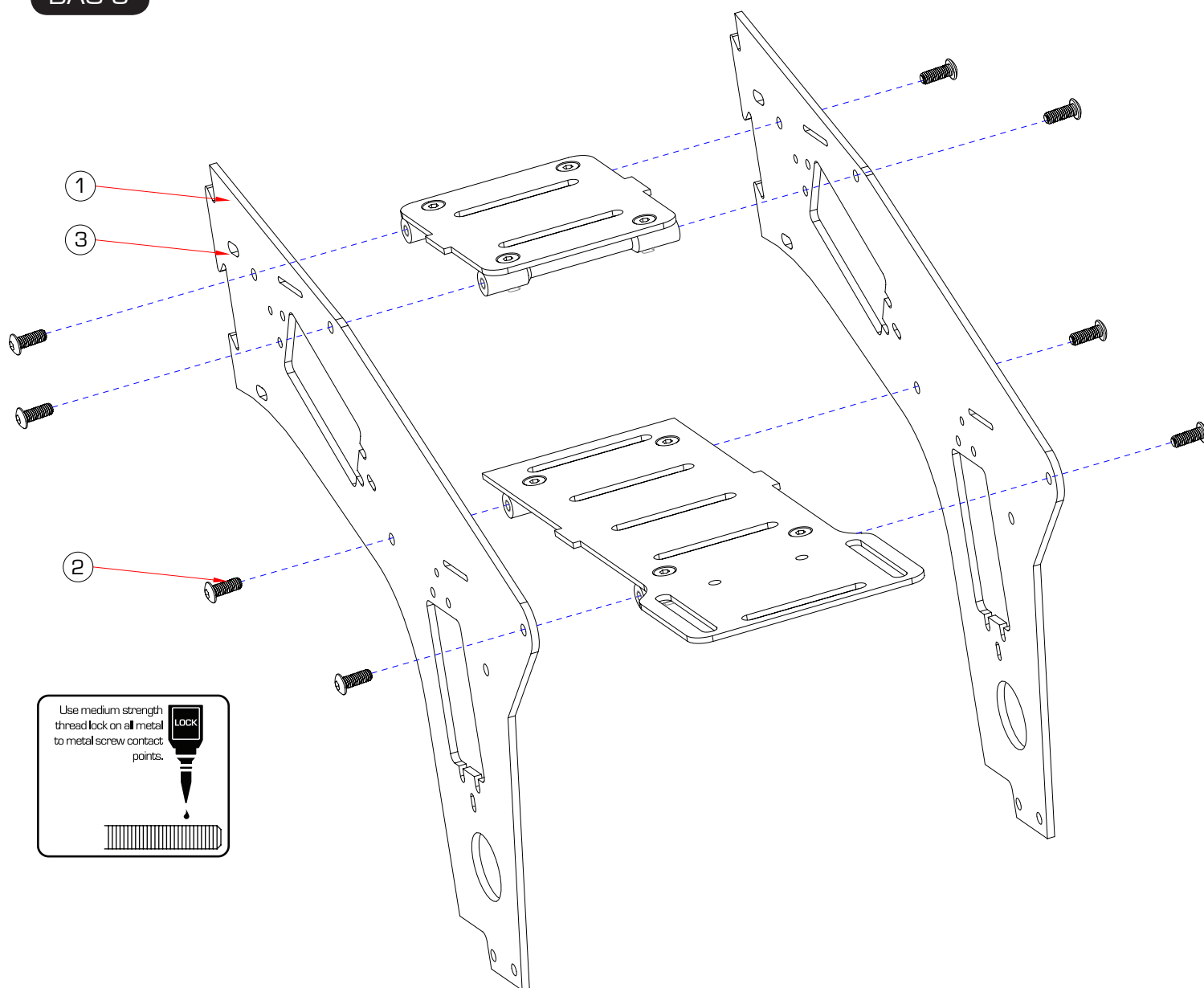


Start by installing the four M2.5x6 flush head cap screws into the lower electronics tray by using medium threadlock. Next apply medium threadlock to the remaining four M2.5x6 flush head cap screws and install them into the upper electronics tray. Tighten to the frame support bars.



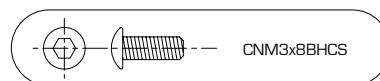
| No. | Part # | Description | Qty |
|-----|--------------|---------------------------------------|-----|
| 1 | CNM2.5x6FHCS | Flush Head Cap Screws[斜头内六角螺钉M2.5x6 | 8 |
| 2 | HW6113A3 | G-10 Upper Electronics Tray[变频器固定板 | 1 |
| 3 | HW6113A6 | Frame Support Bar[铝柱 | 4 |
| 4 | HI6113B3 | G-10 Lower Electronics Tray[接收机固定板 | 1 |
| 5 | HW6113AC3 | Carbon Upper Electronics Tray[变频器固定板 | 1 |
| 6 | HI6113BC3 | Carbon Lower Electronics Tray[变频器固定板 | 1 |

BAG 3



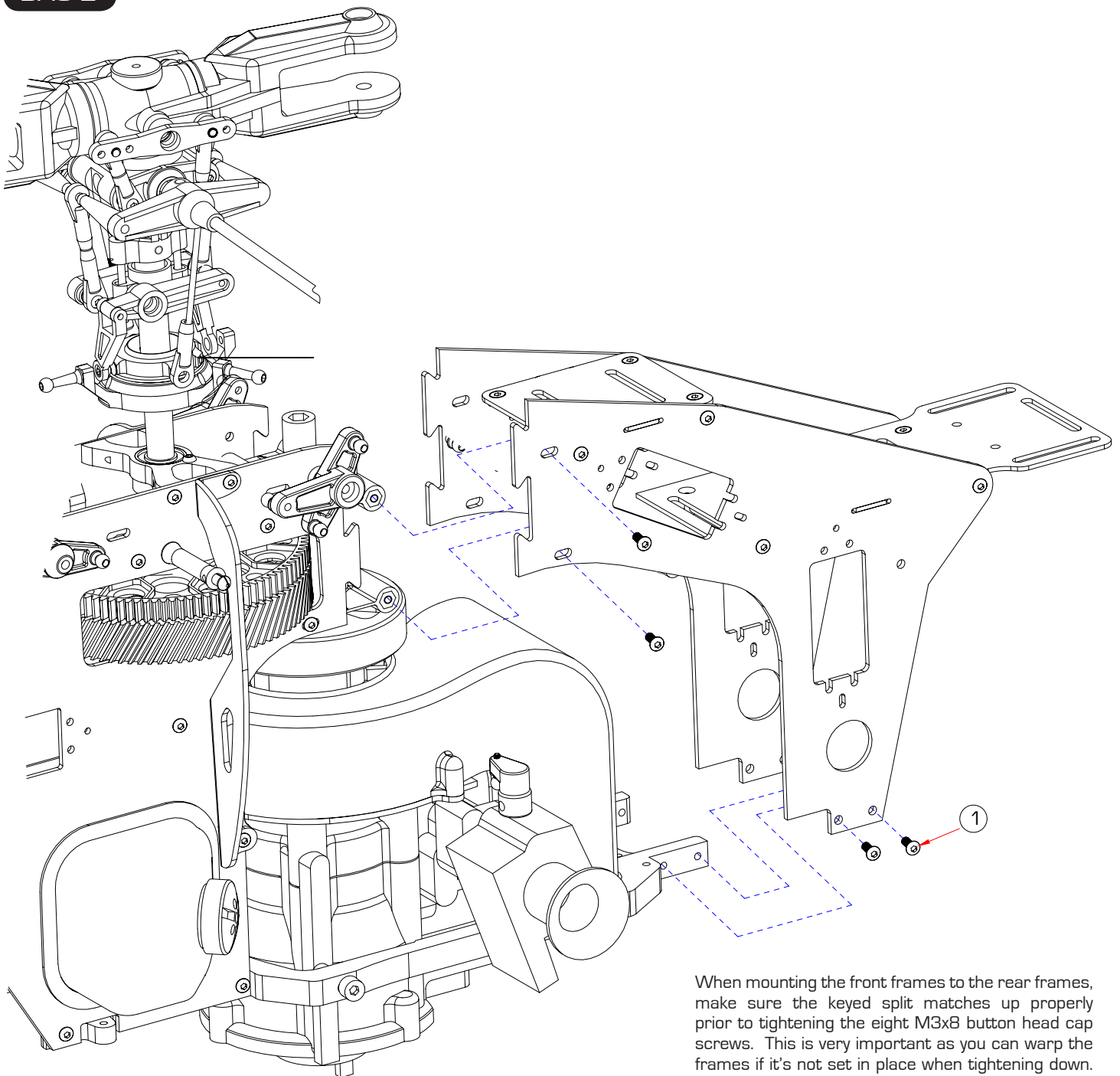
Make sure when fitting the electronics trays that you have a complete mating with the upper side frames. If the keys do not fit into the slots on the side frames and you tighten down on the screws, your frame will be crooked.

Apply medium threadlock to the eight M3x8 button head cap screws and tighten down.

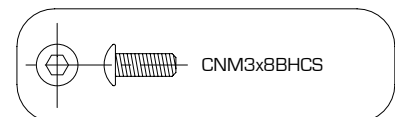
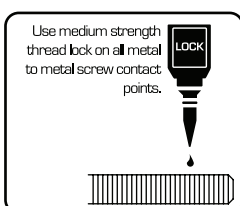


| No. | Part # | Description | Qty |
|-----|------------|-------------------------------------|-----|
| 1 | HI6114 | Front Side Frames G-10(前侧板) | 2 |
| 2 | CNM3x8BHCS | Button Head Cap Screw(圆头内六角螺丝)M3x8 | 8 |
| 3 | HI6114C | Front Side Frames Carbon (前侧板) | 1 |

BAG 2

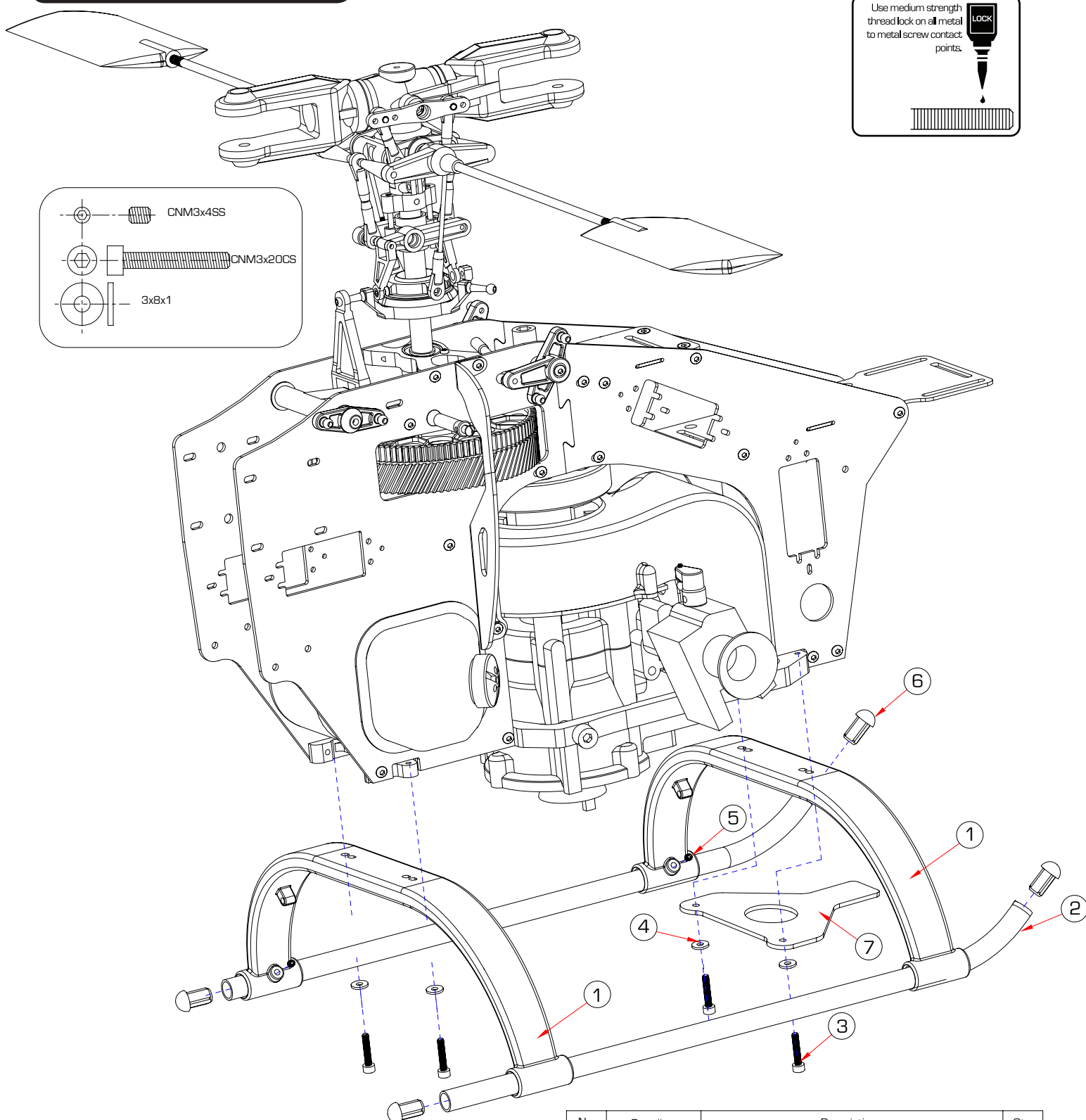


When mounting the front frames to the rear frames, make sure the keyed split matches up properly prior to tightening the eight M3x8 button head cap screws. This is very important as you can warp the frames if it's not set in place when tightening down. Once you have the eight M3x8 button head cap screws in place, make sure the clutch bell can spin properly around the clutch shoe. If there is binding, adjust the clutchbell bearing block. Prior to installing the eight M3x8 button head cap screws, be sure to use medium threadlock.



| No. | Part # | Description | Qty |
|-----|------------|-------------------------------------|-----|
| 1 | CNM3x8BHCS | Button Head Cap Screw(圆头内六角螺栓)M3x8 | 8 |

LANDING GEAR PACKAGE



Install the landing skids onto the landing struts one side at a time. After installing the landing skids, position the landing struts on the skids so that they match up with the mounting positions on the frames. Place the washers onto the M3x16 cap screws and then apply medium threadlock. Install the screws through the landing struts and tighten onto the frames. Turn the landing skids so that the curve towards the front is facing straight up. Install the four M3x4 set screws to lock the skids into place. Do not tighten these too much as you can crack the plastic struts. Lastly, install the landing skid stoppers.

| No. | Part # | Description | Qty |
|-----|-----------|---------------------------------|-----|
| 1 | HI6122D | Plastic Struts(脚架) | 2 |
| 2 | HW6123B | Aluminum Skids with Caps (脚架弯管) | 2 |
| 3 | CNM3x20CS | Cap Screw(杯头内六角螺钉M3x16) | 4 |
| 4 | CNM3x8FW | M3x8x1 Flat Washers(垫片) | 4 |
| 5 | CNM3x4SS | Set Screw(无头内六角螺钉M3x4) | 4 |
| 6 | HW6123B | Skid Caps (脚架塞) | 4 |
| 7 | HI6118 | Canopy Mounting Plate(机头固定板) | 1 |

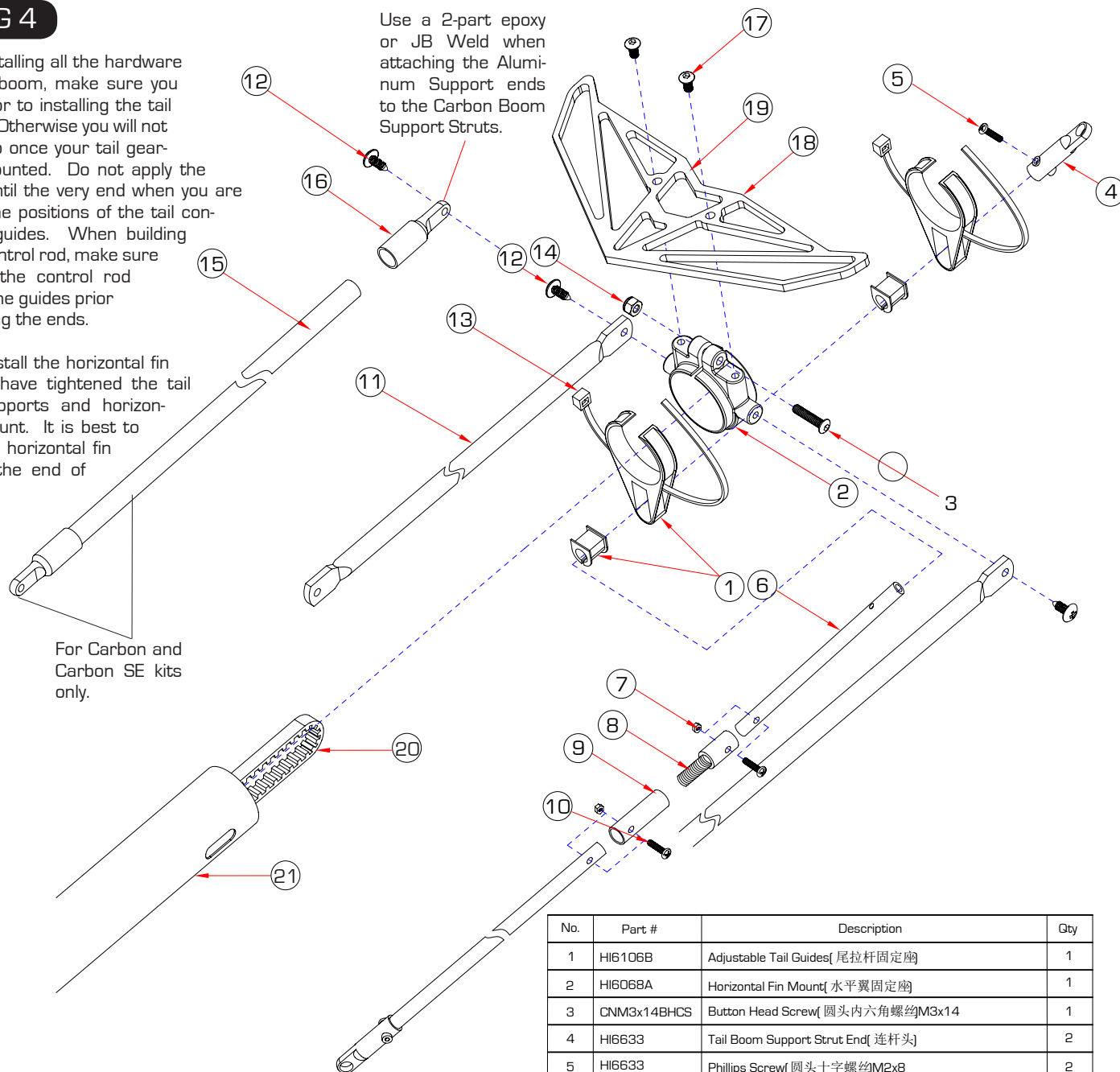
BAG 4

When installing all the hardware onto the boom, make sure you do so prior to installing the tail gearbox. Otherwise you will not be able to once your tail gearbox is mounted. Do not apply the zip ties until the very end when you are sure of the positions of the tail control rod guides. When building the tail control rod, make sure to place the control rod through the guides prior to installing the ends.

Do not install the horizontal fin until you have tightened the tail boom supports and horizontal fin mount. It is best to install the horizontal fin towards the end of your build.

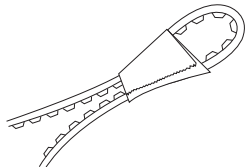
For Carbon and Carbon SE kits only.

Use a 2-part epoxy or JB Weld when attaching the Aluminum Support ends to the Carbon Boom Support Struts.

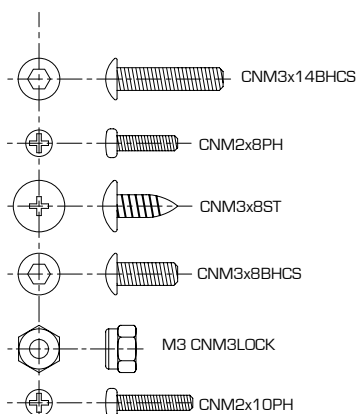


| No. | Part # | Description | Qty |
|-----|-------------|---|-----|
| 1 | HI6106B | Adjustable Tail Guides(尾拉杆固定座) | 1 |
| 2 | HI6068A | Horizontal Fin Mount(水平翼固定座) | 1 |
| 3 | CNM3x14BHCS | Button Head Screw(圆头内六角螺丝)M3x14 | 1 |
| 4 | HI6633 | Tail Boom Support Strut End(连杆头) | 2 |
| 5 | HI6633 | Phillips Screw(圆头十字螺丝)M2x8 | 2 |
| 6 | HI6633 | Tail Control Rod Set(尾舵控制连杆) | 1 |
| 7 | HI6633 | M2 Locknut(M2 螺母) | 2 |
| 8 | HI6633 | Metal Tail Rod Connector(金属尾拉杆接头) | 1 |
| 9 | HI6633 | Plastic Rod End Fittings(塑料尾拉杆接头) | 1 |
| 10 | HI6633 | Phillips Screw(圆头十字螺丝)M2x10 | 2 |
| 11 | HW3202D | Tail Boom Support Struts(尾支撑杆) | 2 |
| 12 | CNM3x8ST | Self Tapping Screws(尖尾自攻螺丝)M3x8 | 2 |
| 13 | HI6106B | Cable Tie(扎带) | 1 |
| 14 | CNM3LOCK | M3 Locknut(M3 螺母) | 1 |
| 15 | HW6202G3 | Carbon Tail Boom Support Struts(碳纤维尾支撑杆) | 2 |
| 16 | HW6202G3 | Aluminum Support End(尾支撑杆接头) | 4 |
| 17 | CNM3x8BHCS | Button Head Screw(圆头内六角螺丝)M3x8 | 2 |
| 18 | HI6067GH | Horizontal Fin G-10(水平翼) | 1 |
| 19 | HI6067GHC | Horizontal Fin Carbon(水平翼) | 1 |
| 20 | HI6631A | Tail Belt Drive(皮带) | 1 |
| 21 | HW6062G3 | Tailboom(尾管) | 1 |

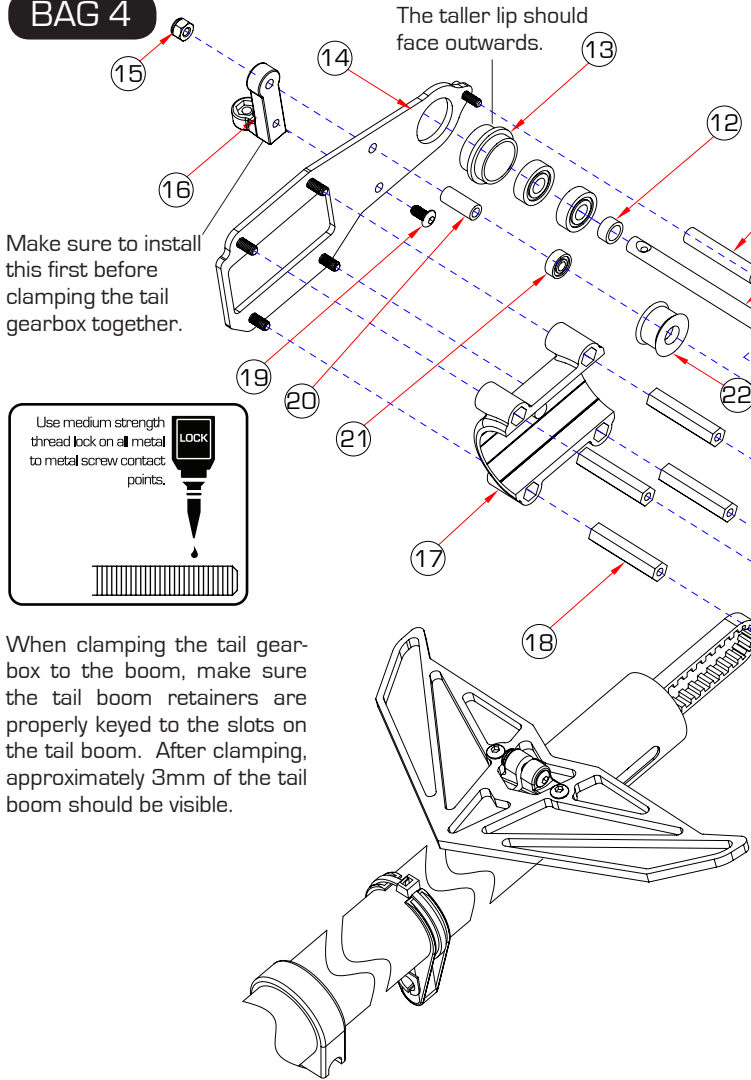
Hint:



To get the belt through the boom easier, apply a piece of tape as shown to the end of the belt and feed it through the boom. After fed through, remove the tape.

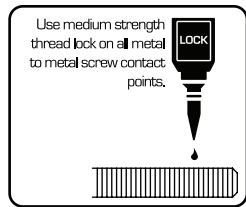


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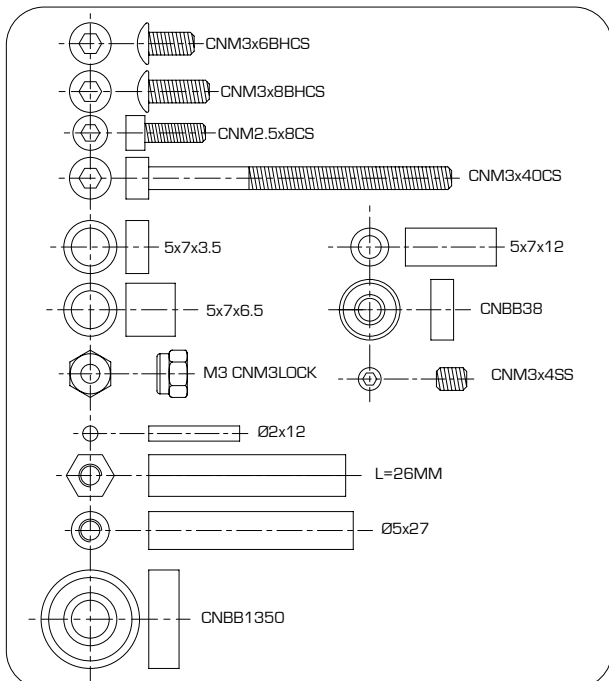


When pressing the bearing retainers into the tail gear box plate, make sure you are pressing it into the correct side. The left and right side are different. If you do not do this, it will be difficult to remove this pieces once it's pressed in.

There are two sets of belts and tail gears supplied with your Radikal G30 kit. When using the 10T metal gear, please only use the wider belt. The narrower belt and 9T plastic gear should only be used if you are running a lower head-speed and want a faster tail rotor speed, typically used when set up for scale applications.



When clamping the tail gearbox to the boom, make sure the tail boom retainers are properly keyed to the slots on the tail boom. After clamping, approximately 3mm of the tail boom should be visible.



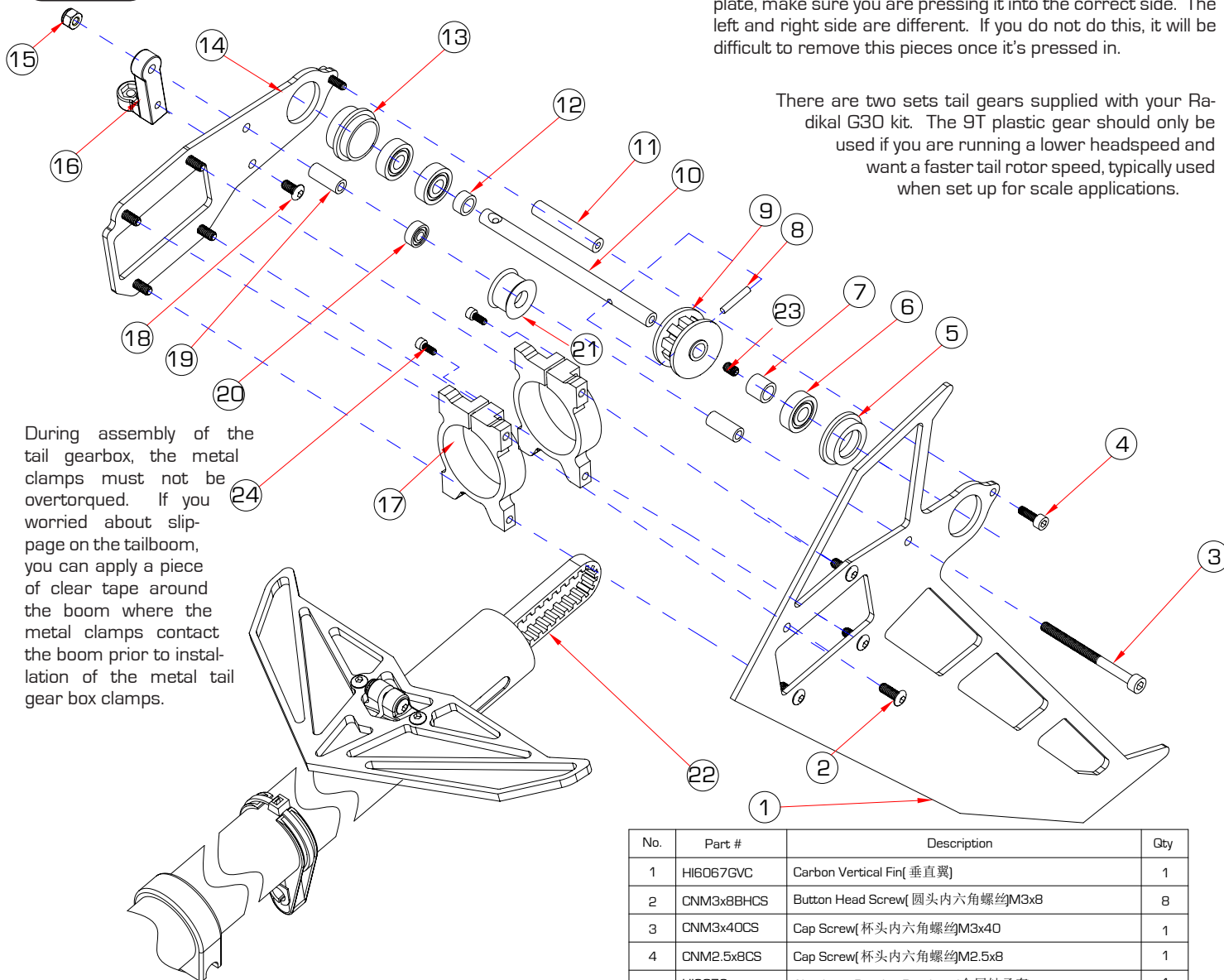
| No. | Part # | Description | Qty |
|-----|------------|--|-----|
| 1 | HI6067GV | Vertical Fin[垂直翼] | 1 |
| 2 | CNM3x8BHCS | Button Head Screw[圆头内六角螺丝M3x8 | 8 |
| 3 | CNM3x40CS | Cap Screw[杯头内六角螺丝M3x40 | 1 |
| 4 | CNM2.5x8CS | Cap Screw[杯头内六角螺丝M2.5x8 | 1 |
| 5 | HI6079 | Aluminum Bearing Retainer (金属轴承套) | 1 |
| 6 | CNBB1350 | Bearing(滚珠轴承)5x13x4 | 3 |
| 7 | HW6073B | Spacer Units[铝套]M5x7x6.5 | 1 |
| 8 | CNE529 | Lock Pin[插销]Ø2x12 | 1 |
| 9 | HW6079A | Aluminum Tail Gear & Pulley 10T (金套皮带轮) | 1 |
| 10 | HW6073B | Tail Shaft[尾翼轴] | 1 |
| 11 | HW6078TP | Threaded Spacer[铝柱]Ø5x27 | 1 |
| 12 | HW6073B | Spacer Units[铝套]5x7x3.5 | 1 |
| 13 | HI6079 | Aluminum Bearing Retainer (金属轴承套) | 1 |
| 14 | HW6078TP | Tail Gear Box Clip[尾齿轮箱夹片] | 1 |
| 15 | CNM3LOCK | M3 Locknut[M3 螺母] | 1 |
| 16 | HI6078B | "L" Arm[L 臂] | 1 |
| 17 | HI6078B | Tail Gear Box[尾齿轮箱] | 2 |
| 18 | HI6078BS | Short Threaded Hex Spacer[六角铝柱]L=26mm | 4 |
| 19 | CNM3x6BHCS | Button Head Screw[圆头内六角螺丝M3x6 | 1 |
| 20 | HI6078P | Spacer Units[铝套]3x5x12 | 2 |
| 21 | CNBB038 | Bearing(滚珠轴承)3x8x3 | 1 |
| 22 | HW6079A | Tail Belt Tensioner Pulley (金属皮带压轮) | 1 |
| 23 | CNM3x4SS | Set Screw[无头内六角螺丝M3x4 | 1 |

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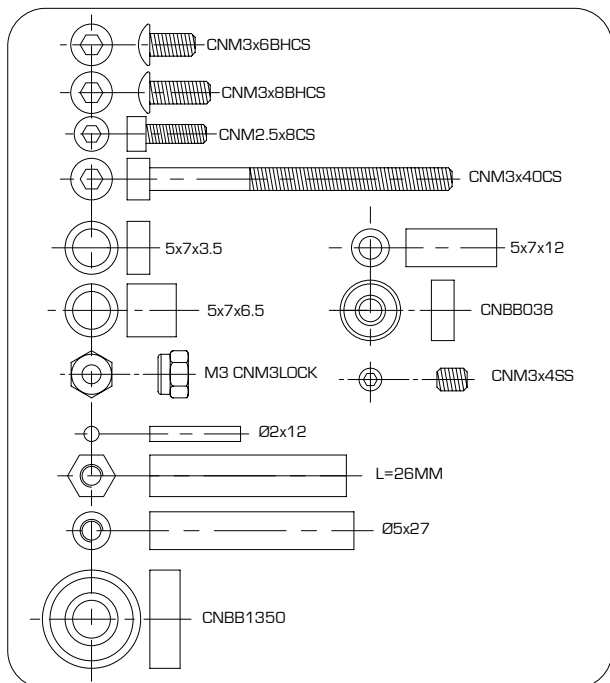
When pressing the bearing retainers into the tail gear box plate, make sure you are pressing it into the correct side. The left and right side are different. If you do not do this, it will be difficult to remove this pieces once it's pressed in.

There are two sets tail gears supplied with your Radikal G30 kit. The 9T plastic gear should only be used if you are running a lower headspeed and want a faster tail rotor speed, typically used when set up for scale applications.

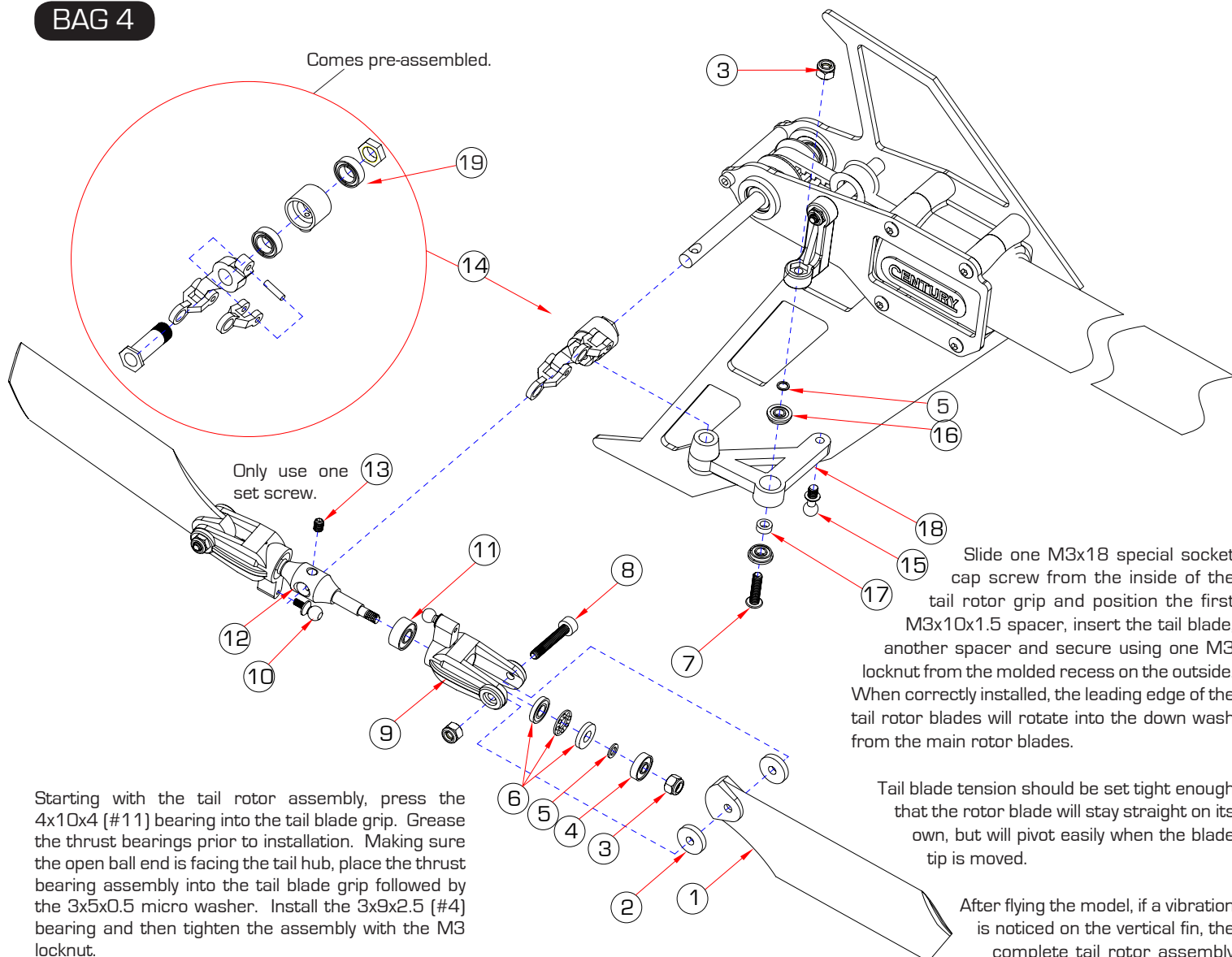
During assembly of the tail gearbox, the metal clamps must not be overtightened. If you worried about slip-page on the tailboom, you can apply a piece of clear tape around the boom where the metal clamps contact the boom prior to installation of the metal tail gear box clamps.



| No. | Part # | Description | Qty |
|-----|--------------|--|-----|
| 1 | HI6067GVC | Carbon Vertical Fin(垂直翼) | 1 |
| 2 | CNM3x8BHCS | Button Head Screw(圆头内六角螺丝)M3x8 | 8 |
| 3 | CNM3x40CS | Cap Screw(杯头内六角螺丝)M3x40 | 1 |
| 4 | CNM2.5x8CS | Cap Screw(杯头内六角螺丝)M2.5x8 | 1 |
| 5 | HI6079 | Aluminum Bearing Retainer(金属轴承套) | 1 |
| 6 | CNBB1350 | Bearing(滚珠轴承)5x13x4 | 3 |
| 7 | HW6073BS | Spacer Units(铝套)M5x7x6.5 | 1 |
| 8 | CNE529 | Lock Pin(插销)Ø2x12 | 1 |
| 9 | HW6079A | Aluminum Tail Gear & Pulley 10T(金套皮带轮) | 1 |
| 10 | HW6073B | Tail Shaft(尾翼轴) | 1 |
| 11 | HW6078TP | Threaded Spacer(铝柱)Ø5x27 | 1 |
| 12 | HW6073BS | Spacer Units(铝套)5x7x3.5 | 1 |
| 13 | HI6079 | Aluminum Bearing Retainer(金属轴承套) | 1 |
| 14 | HW6078TPC | Tail Gear Box Clip(尾齿轮箱夹片) | 1 |
| 15 | CNM3LOCK | M3 Locknut(M3 螺母) | 1 |
| 16 | HI6078B | "L" Arm(L臂) | 1 |
| 17 | HW6078C | Metal Tail Gear Box(金属尾齿轮箱) | 2 |
| 18 | CNM3x6BHCS | Button Head Screw(圆头内六角螺丝)M3x6 | 1 |
| 19 | HI6078P | Spacer Units(铝套)3x5x12 | 2 |
| 20 | CNBB038 | Bearing(滚珠轴承)3x8x3 | 1 |
| 21 | HW6079A | Tail Belt Tensioner Pulley(金属皮带压轮) | 1 |
| 22 | HI6631A | Tail Drive Belt(皮带) | 1 |
| 23 | CNM3x4SS | Set Screw(无头内六角螺丝)M3x4 | 1 |
| 24 | CNM2.5x8FHCS | Flush Head Cap Screws(斜头内六角螺丝)M2.5x8 | 2 |



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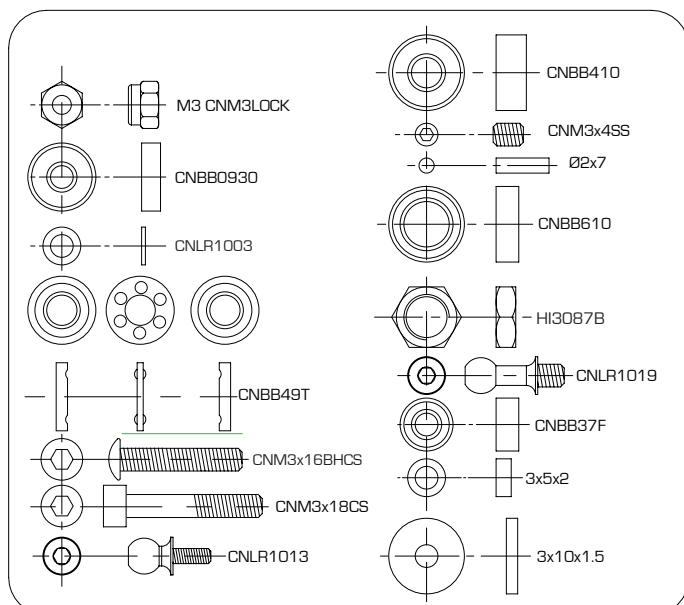


Starting with the tail rotor assembly, press the 4x10x4 (#11) bearing into the tail blade grip. Grease the thrust bearings prior to installation. Making sure the open ball end is facing the tail hub, place the thrust bearing assembly into the tail blade grip followed by the 3x5x0.5 micro washer. Install the 3x9x2.5 (#4) bearing and then tighten the assembly with the M3 locknut.

Tail blade tension should be set tight enough that the rotor blade will stay straight on its own, but will pivot easily when the blade tip is moved.

After flying the model, if a vibration is noticed on the vertical fin, the complete tail rotor assembly can be removed with the hub and further balanced using a High Point balancer.

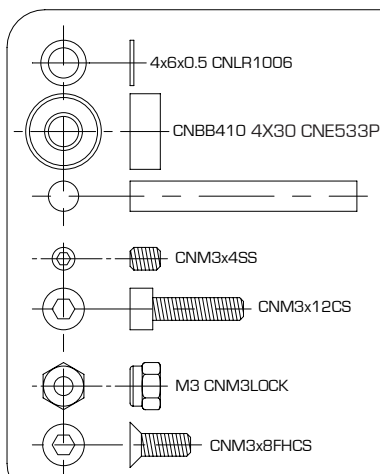
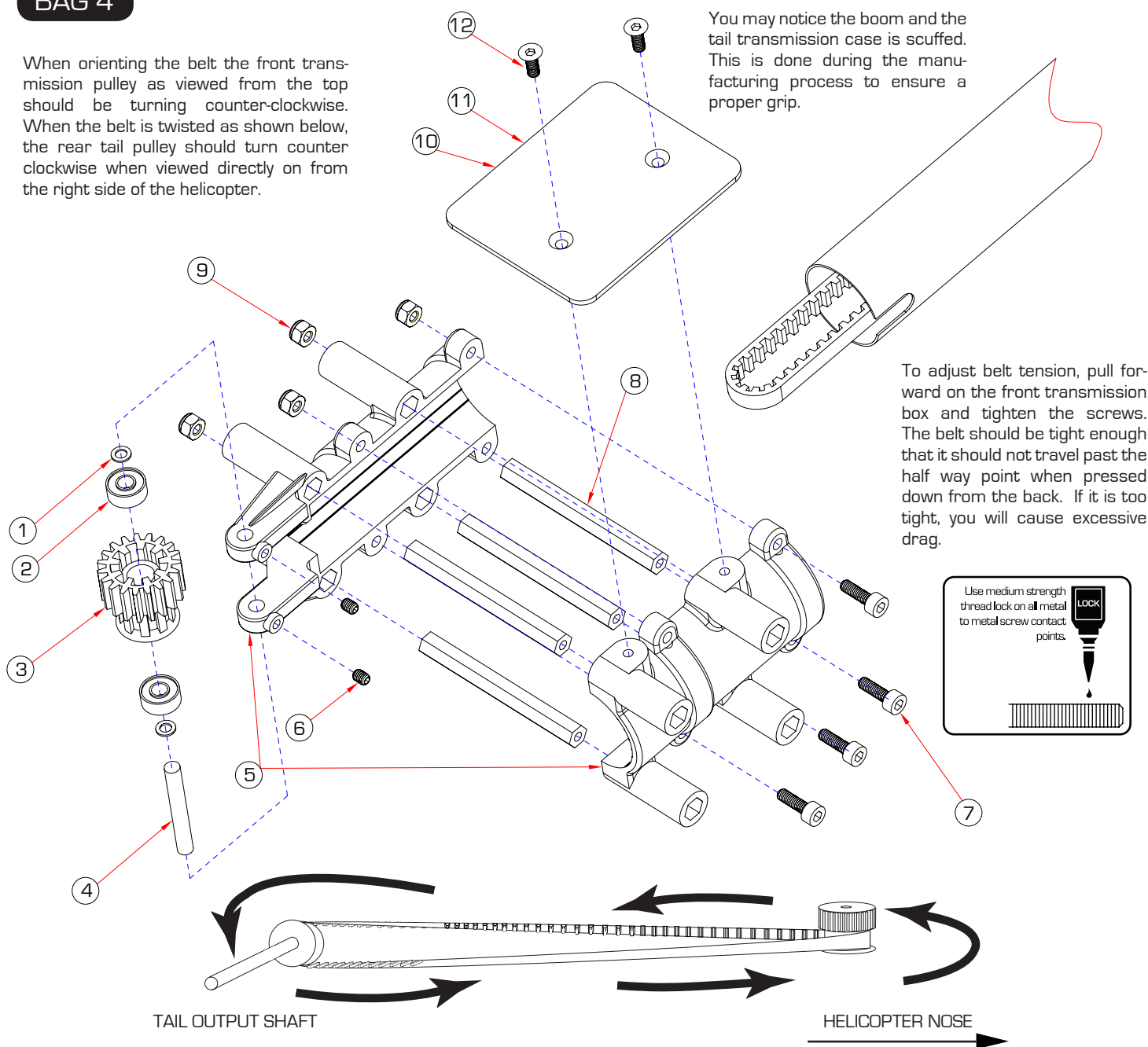
| No. | Part # | Description | Qty |
|-----|-------------|---------------------------------|-----|
| 1 | HI6099A | Tail Rotor Blades(尾旋翼) | 2 |
| 2 | HW6204A | Micro Washer[垫片]3x10x1.5 | 4 |
| 3 | CNM3LOCK | M3 Locknut[M3 螺母] | 3 |
| 4 | CNBB0930 | Bearing[滚珠轴承]3x9x2.5 | 2 |
| 5 | CNLR1003 | Micro Washer[垫片]3x5x0.5 | 3 |
| 6 | CNBB49T | Thrust Ball[止推轴承]d4xD9x4 | 2 |
| 7 | CNM3x16BHCS | Button Head Screw[圆头内六角螺丝]M3x16 | 2 |
| 8 | CNM3x18CS | Cap Screw[杯头内六角螺丝]M3x18 | 2 |
| 9 | HI6096A | Tail Rotor Grip[尾旋翼夹片] | 2 |
| 10 | CNLR1013 | Steel ball 2mm Thread[m2 球头螺丝] | 2 |
| 11 | CNBB410 | Bearing[滚珠轴承]4x10x4 | 2 |
| 12 | HW3098A | Steel Tail Rotor[尾旋翼中心座] | 1 |
| 13 | CNM3x4SS | Set Screw[无头内六角螺丝]M3x4 | 1 |
| 14 | HI3087B | Tail Pitch Plate[尾翼控制臂组] | 1 |
| 15 | CNLR1019 | M3 Linkage Ball[球头螺丝] L=13MM | 1 |
| 16 | CNBB37F | Flange Bearing[带边滚珠轴承]3x7x3 | 2 |
| 17 | HI6102A | Bellcrank Spacer[铁套]3x5x2 | 1 |
| 18 | HI6102A | Tail Bellcrank Lever[尾控制臂] | 1 |
| 19 | CNBB610 | Ball Bearing 6X10X3 | 2 |



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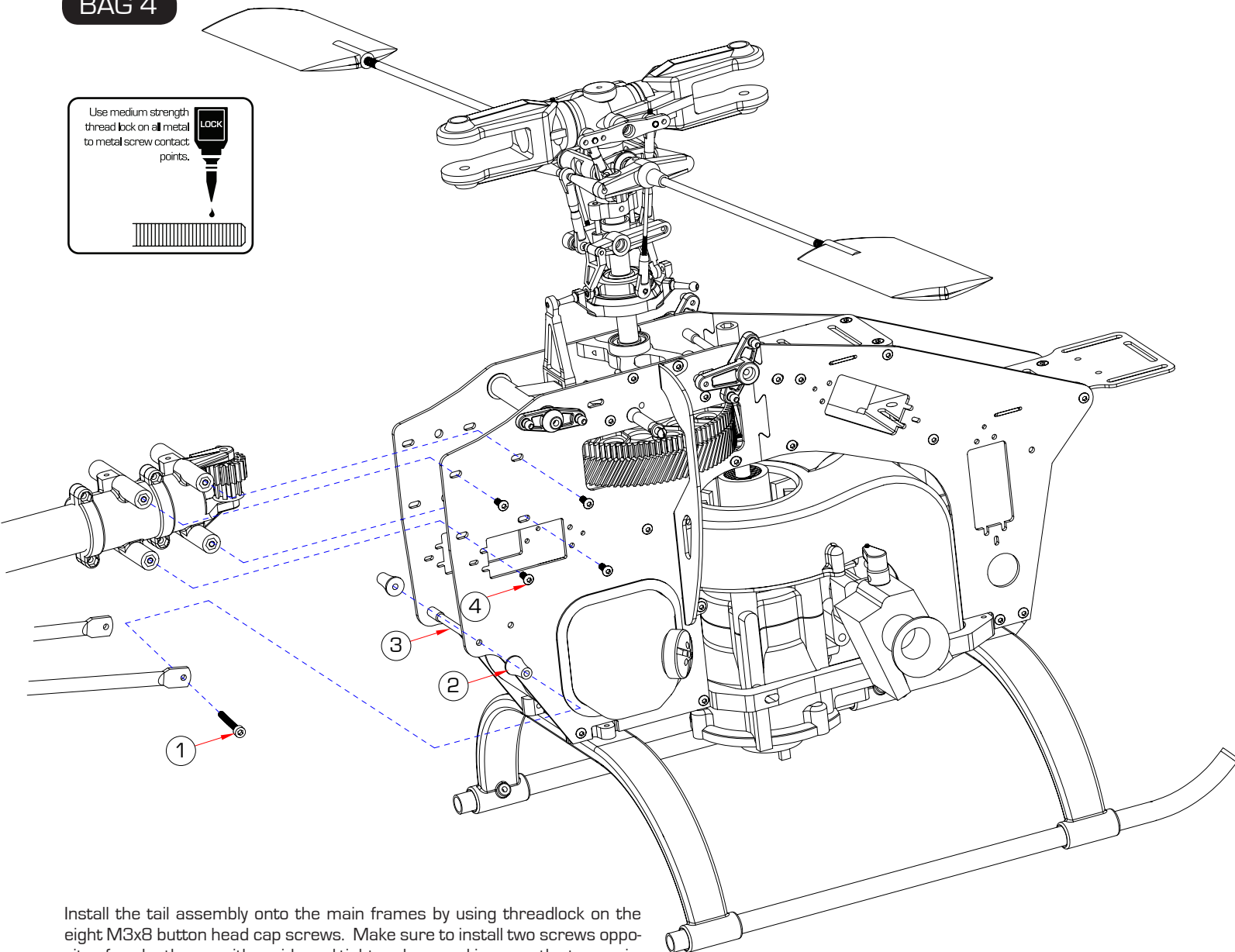
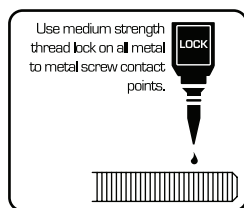
When orienting the belt the front transmission pulley as viewed from the top should be turning counter-clockwise. When the belt is twisted as shown below, the rear tail pulley should turn counter clockwise when viewed directly on from the right side of the helicopter.

You may notice the boom and the tail transmission case is scuffed. This is done during the manufacturing process to ensure a proper grip.

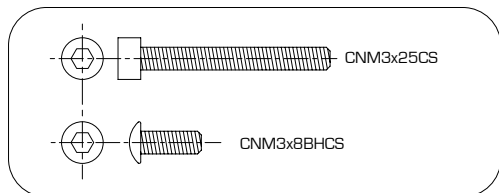


| No. | Part # | Description | Qty |
|-----|------------|-------------------------------------|-----|
| 1 | CNLR1006 | Micro Washer[垫片]4x6x0.5 | 2 |
| 2 | CNBB410 | Bearing[滚珠轴承]4x10x4 | 2 |
| 3 | HI6533 | Transmission Gear[皮带输入齿轮] | 1 |
| 4 | CNE533P | Lock Pin[插销]M4x30 | 1 |
| 5 | HI6060B | Upper Transmission Case[尾管夹片] | 2 |
| 6 | CNM3x4SS | Set Screw[无头内六角螺]M3x4 | 2 |
| 7 | CNM3x12CS | Button Head Cap Screw [杯头内六角螺]M3x12 | 4 |
| 8 | HW6007GS | Long Hex Spacers[长六角铝柱]L=52MM | 2 |
| 9 | CNM3LOCK | M3 Locknut[M3螺母] | 4 |
| 10 | HI6117A | Head Lock Gyro Plate G-10 [陀螺仪板] | 1 |
| 11 | HI6117AC | Head Lock Gyro Plate Carbon [陀螺仪板] | 1 |
| 12 | CNM3x8FHCS | Flush Head Cap Screws[斜头内六角螺]M3x8 | 2 |

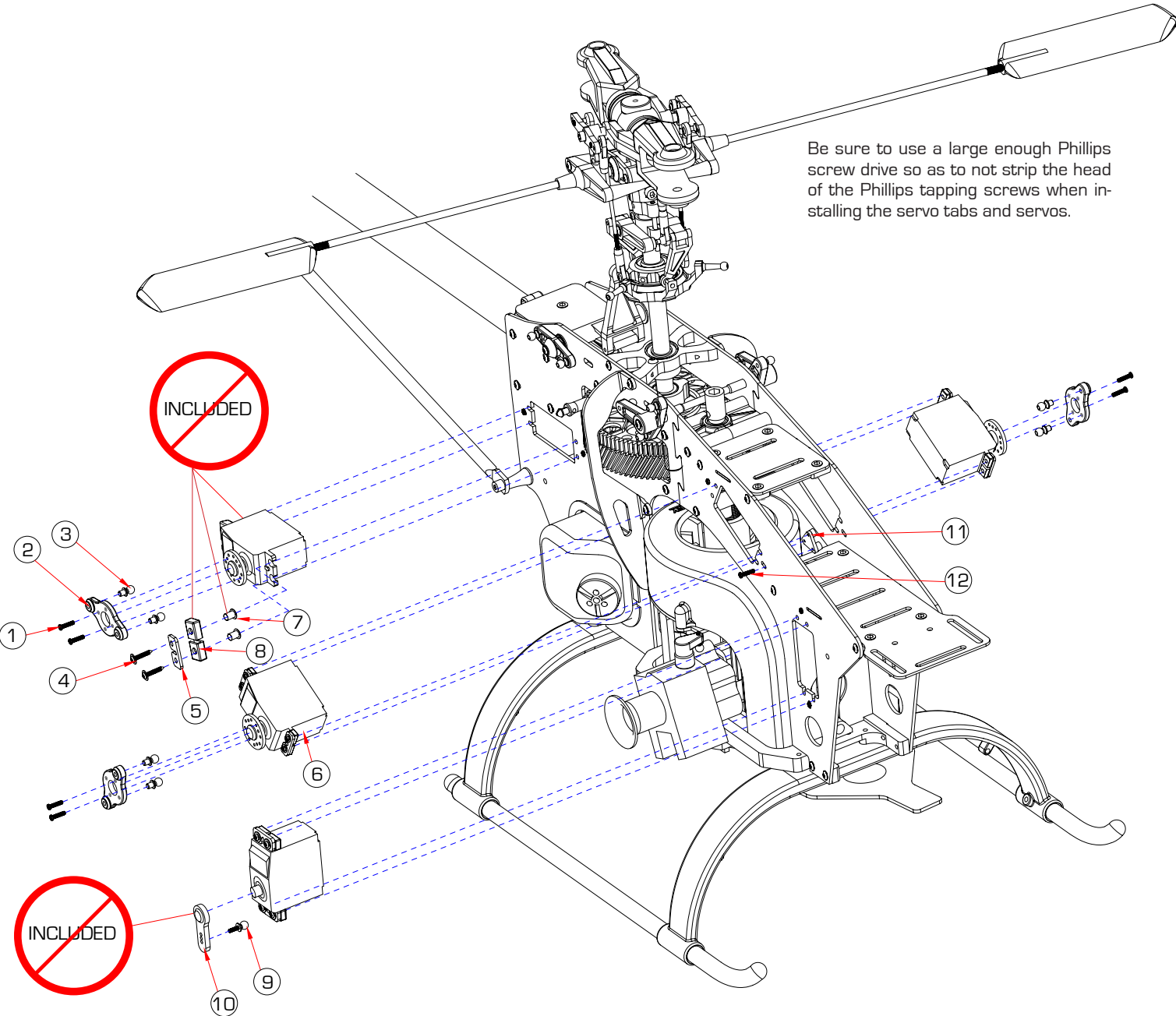
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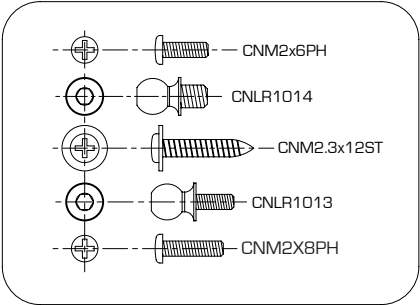
Install the tail assembly onto the main frames by using threadlock on the eight M3x8 button head cap screws. Make sure to install two screws opposite of each other on either side and tighten down making sure the transmission gear is properly meshed with the tail drive gear. If you are unsure about proper gear mesh, use a strip of paper slightly taller than the tail drive gear and pass it between the gears as you spin the tail drive gear. As the paper passes through from one side of the frames to the other, a nice zig-zagged pattern should develop. If it is a very faint zig-zag pattern or no pattern appears, the gear mesh is too loose. If the paper comes through crushed, the gear mesh is too tight. After the tail assembly is installed on the main frame, install the tail boom braces using the two M3x25 cap screws and boom support posts making sure to apply medium threadlock.



| No. | Part # | Description | Qty |
|-----|------------|------------------------------------|-----|
| 1 | CNM3x25CS | Cap Screw(杯头内六角螺丝M3x25 | 2 |
| 2 | HW6202BS | Boom Support Standoff(铝柱) | 2 |
| 3 | HI6031S3 | Aluminum Post(铝柱) | 1 |
| 4 | CNM3x8BHCS | Button Head Cap Screw(圆头内六角螺丝M3x8 | 8 |



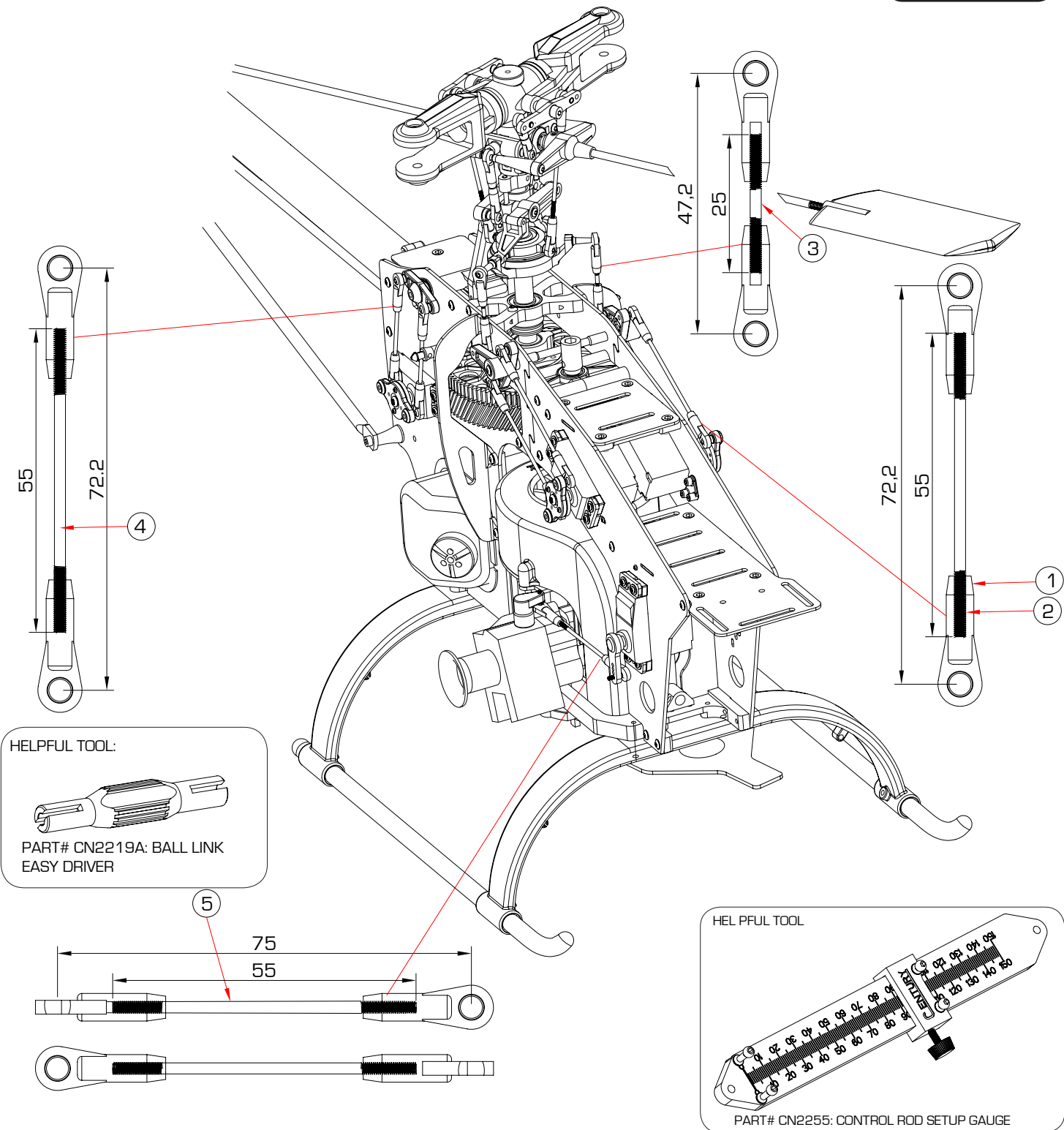
A servo arm of approximately 12mm is recommend for the throttle servo.



| No. | Part # | Description | Qty |
|-----|--------------|-------------------------------------|-----|
| 1 | CNM2x6PH | Phillips Screw(十字螺丝)M2x6 | 6 |
| 2 | HW6192C | Servo Control Arm(伺服机控制臂) | 3 |
| 3 | CNLR1014 | M3 Linkage Ball(球头螺丝) | 6 |
| 4 | CNM2.3x12ST | Self Tapping Screws(尖尾自攻螺丝)M2.3x12 | 16 |
| 5 | HI3205A | Servo Mounting Plate(伺服机固定板) | 8 |
| 6 | NOT INCLUDED | Servo(伺服机) | 4 |
| 7 | NOT INCLUDED | Copper Rivet(铜铆钉) | 16 |
| 8 | NOT INCLUDED | Anti-Vibration Pad(防震胶垫) | 8 |
| 9 | CNLR1013 | Steel Ball 2mm Thread(m2 球头螺丝) | 1 |
| 10 | NOT INCLUDED | Metal Servo Arm(金属伺服机控制臂) | 1 |
| 11 | HI6205B | Servo Mount 3 Hole Tab (伺服机固定座) | 8 |
| 12 | CNM2x8PH | Phillips Screw(十字螺丝)M2x8 | 8 |

it's centered prior to attaching the servo arm. Once the servo arm is attached, then install the rudder servo into the frame.

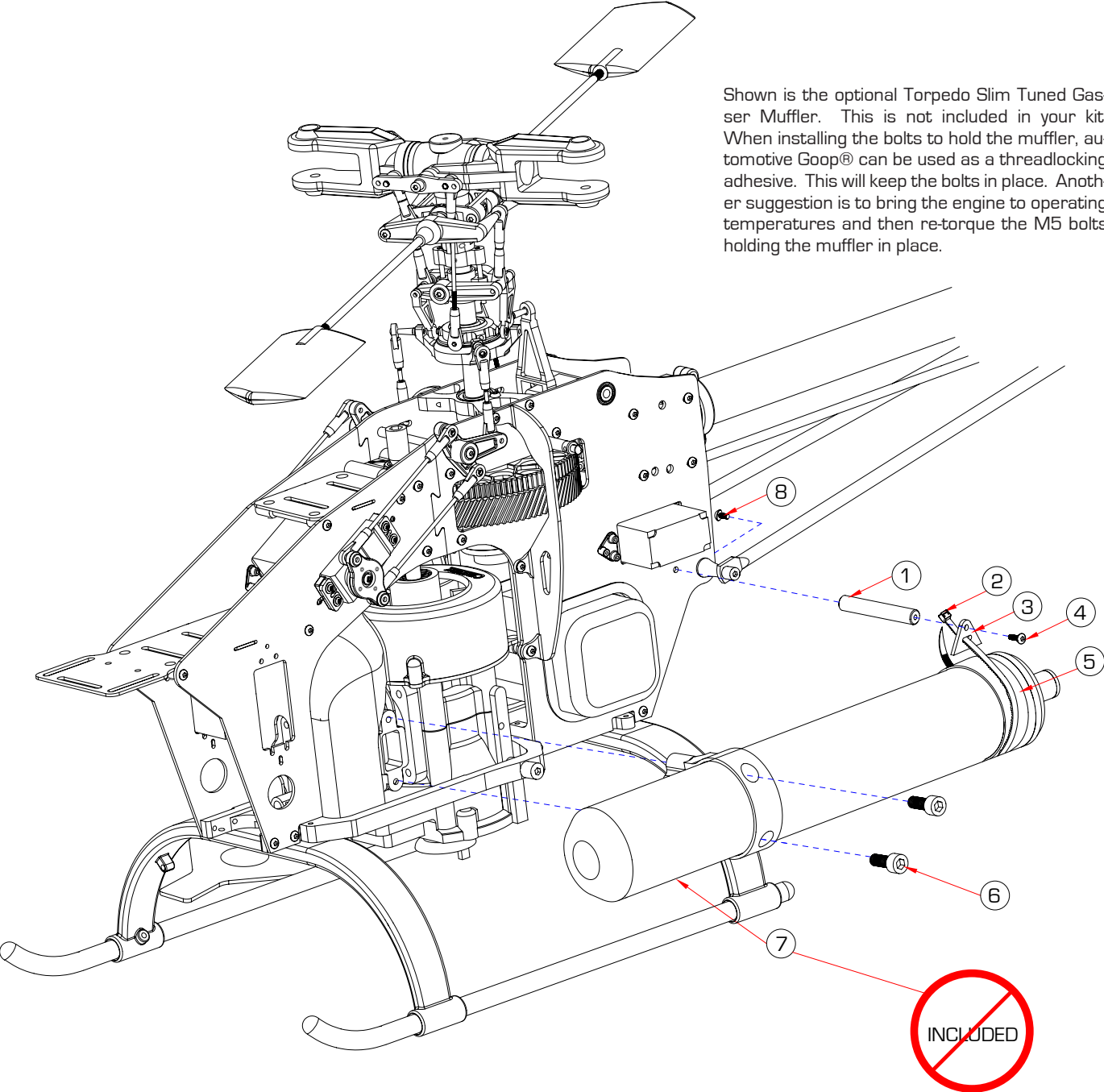
| No. | Part # | Description | Qty |
|-----|--------------|-------------------------------------|-----|
| 1 | CNM2.3x12ST | Self Tapping Screws[尖尾自攻螺丝]M2.3x12 | 4 |
| 2 | HI3205A | Servo Mounting Plate[伺服机固定板] | 2 |
| 3 | NOT INCLUDED | Anti-Vibration Pad[防震胶垫] | 2 |
| 4 | NOT INCLUDED | Servo[伺服机] | 1 |
| 5 | CNM2x8PH | Phillips Screw[十字螺丝]M2x8 | 2 |
| 6 | HI6205B | Servo Mount 3 Hole Style [伺服机固定座] | 2 |
| 7 | NOT INCLUDED | Metal Servo Arm [金属伺服机控制臂] | 1 |
| 8 | CNLR1013 | Steel Ball 2mm Thread[M2 球头螺丝] | 1 |



NOTICE SIZE OF HOLES ON BALL LINKS

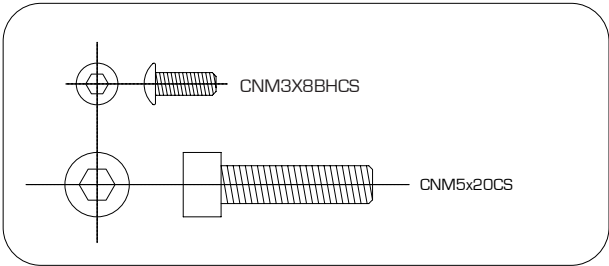
THE SIDE WITH THE SMALLER HOLE SHOULD FACE OUTWARDS

| No. | Part # | Description | Qty |
|-----|---------|---------------------|-----|
| 1 | HI6145 | Ball Link(塑胶球头连接头) | 18 |
| 2 | HW6192D | Pushrod(连杆)L=85MM | 4 |
| 3 | HW6192D | Pushrod(连杆)L=25MM | 2 |
| 4 | HW6192D | Pushrod(连杆)L=55MM | 2 |
| 5 | HW6192D | Pushrod(连杆)L=80MM | 1 |

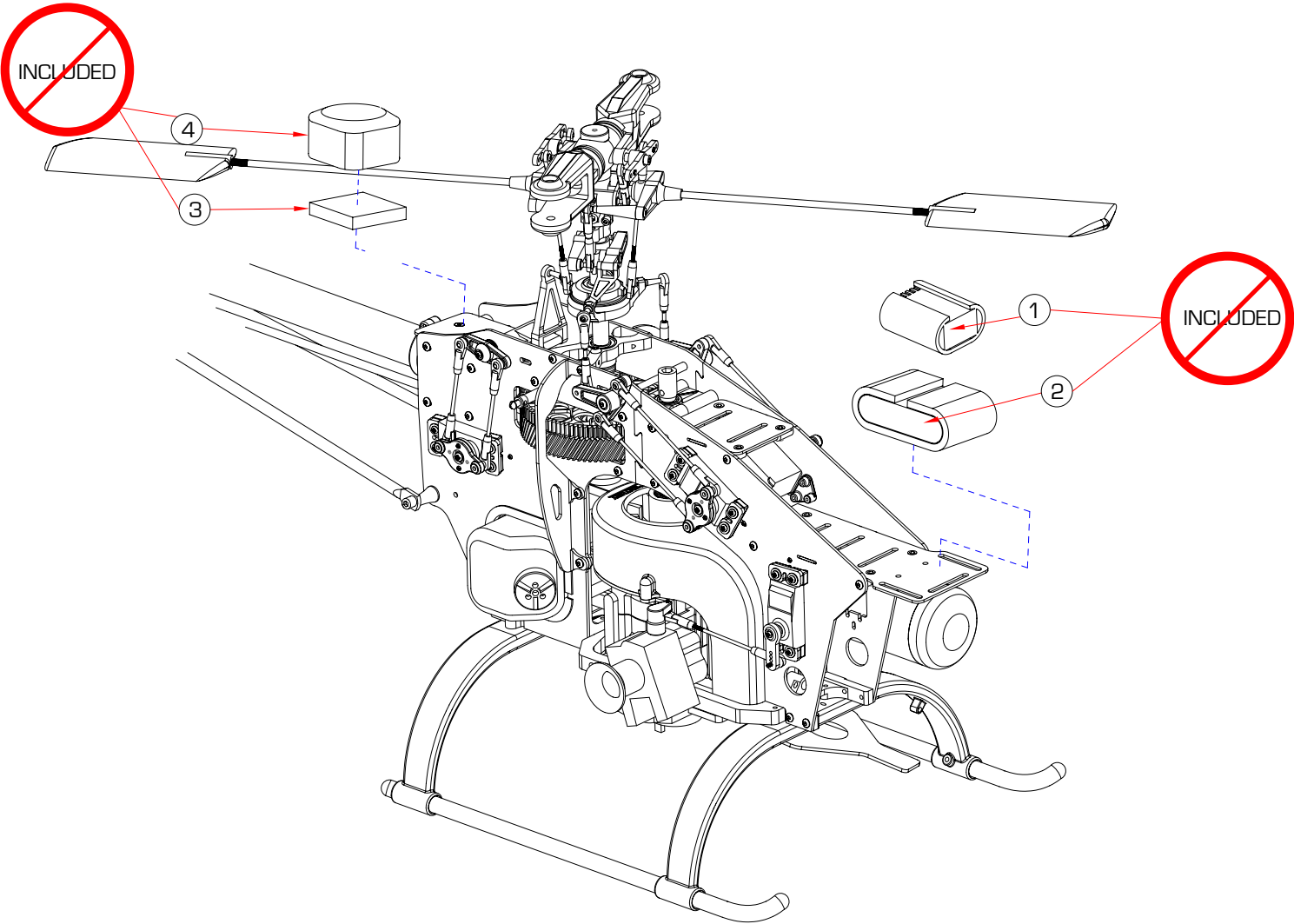


Shown is the optional Torpedo Slim Tuned Gasser Muffler. This is not included in your kit. When installing the bolts to hold the muffler, automotive Goop® can be used as a threadlocking adhesive. This will keep the bolts in place. Another suggestion is to bring the engine to operating temperatures and then re-torque the M5 bolts holding the muffler in place.

If you purchased a Zenoah engine, the engine package should include the stock black box muffler. This muffler can be used however modifications to the canopy are necessary to accomodate the fitment. It is highly recommended to purchase a muffler such as the Torpedo Slim (CN3071) or equivalent.

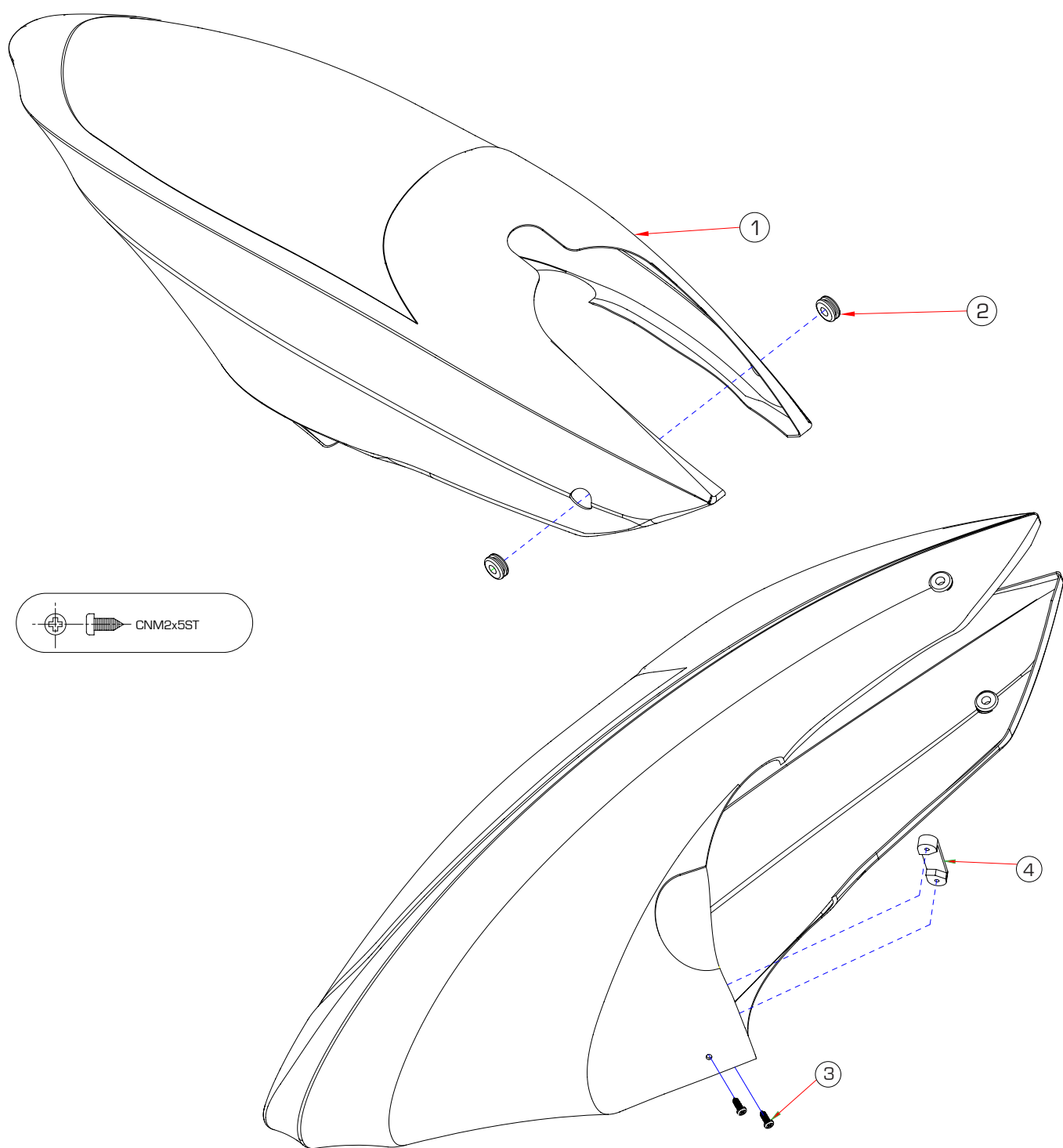


| No. | Part # | Description | Qty |
|-----|------------|------------------------------------|-----|
| 1 | CN3071A | Aluminum Bar (铝柱) | 1 |
| 2 | CN3071A | Zip Tie (绑带) | 1 |
| 3 | CN3071A | Fixed block(固定块) | 1 |
| 4 | CNM3x8BHCS | Button Head Cap Screw(圆头内六角螺丝)M3x8 | 1 |
| 5 | CN3071A | Padding Material(刹车皮) | 1 |
| 6 | CNM5x20CS | Cap Screw(杯头内六角螺丝)M5x20 | 2 |
| 7 | CN3071 | Speed Torpedo v2 Muffler(排气管) | 1 |
| 8 | CNM3x8BHCS | Button Head Cap Screw(圆头内六角螺丝)M3x8 | 1 |



The electronics configuration is shown as an example of how to mount the electronics. It is not necessary to mount your electronics this way.

| No. | Part # | Description | Qty |
|-----|--------------|---------------------------|-----|
| 1 | NOT INCLUDED | Receiver[接收机] | 1 |
| 2 | NOT INCLUDED | Receiver Battery[电池] | 2 |
| 3 | NOT INCLUDED | Gyro Isolation Foam[防震垫片] | 1 |
| 4 | NOT INCLUDED | Gyro[陀螺仪] | 1 |

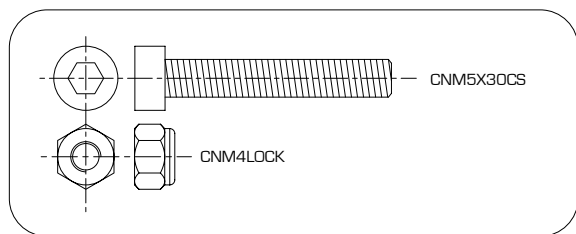
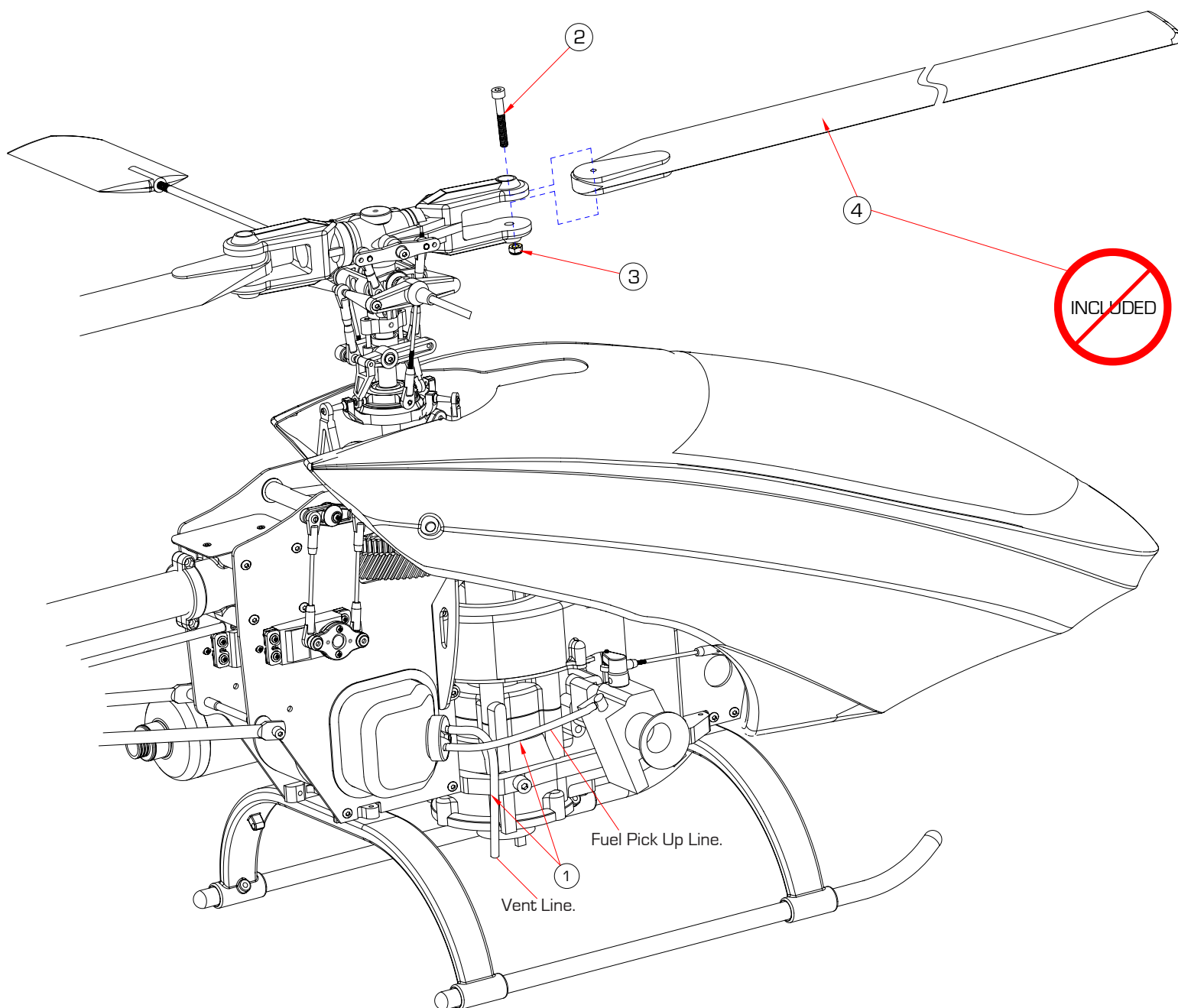


Attach the decals as shown. For a better reference, please refer to the photo on the box cover.



| No. | Part # | Description | Qty |
|-----|-----------|--------------------------------|-----|
| 1 | HI6130GBW | FRP Canopy(机头) | 1 |
| 2 | CN2210A | Canopy Grommet(橡皮环) | 2 |
| 3 | CNM2X5ST | M2x5 Self Tapping Screws(尖尾螺丝) | 2 |
| 4 | HI3129A | Canopy Mount(机头固定座) | 1 |

Carbon SE version comes with a pre-painted fiberglass canopy (HI6130GRY)



| No. | Part # | Description | Qty |
|-----|--------------|---------------------------|-----|
| 1 | HI6139F | Fuel Line[油管] | 1 |
| 2 | CNM5X30CS | Cap Screw[杯头内六角螺丝M5x30] | 2 |
| 3 | CNM5LOCK | M5 Locknut[M5 螺母] | 2 |
| 4 | NOT INCLUDED | Rotorblades[螺旋桨] | 2 |

Congratulations on finishing the build of the Radikal G30 helicopter. Please follow your instruction manual on setting up your transmitter and gyro systems. Also it is very important that you follow the instructions included with the Zenoah G23-G30 engine for the break in process and finally tuning the engine. If the steps are not followed your engine will not perform at it's optimal levels.

[illegible]